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THE AMERICAN PRACTITIONER.

MARCH, 1879.

Certainly it is excellent discipline for an author to feel that he must say all that he has to say in the fewest possible words, or his reader is sure to skip them; and in the plainest possible words, or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want downright facts at present more than anything else.—RUSKIN.

Original Communications.

THE ELEMENTS OF SURGERY.*

BY JOHN CHIENE, M. D., F. R. C. S. E.

Surgeon to the Edinburgh Royal Infirmary, etc., etc.

LECTURE I.—THE STUDY OF PRINCIPLES—HEALTH AND DISEASE—ACTION OF AN IRRITANT—THE PHYSIOLOGY OF AN INJURED PART—THE BLOOD—BLOOD VESSELS AND TISSUES—THE FORMATION OF INFLAMMATORY LYMPH—THE PROCESS OF REPAIR—HEMORRHAGE—THE REPAIR OF A WOUNDED VESSEL, AND REPAIR IN THE TISSUES GENERALLY, BY BLOOD CLOT.

Introduction.—Among the many advances made in surgical practice during the present century, no two agents have come to play so extensive a part as anesthetics and antiseptics. By the first pain is abolished; by the second putrefaction is prevented. Surgeons are of one mind as to the benefits and advantages of anesthesia, but they are not agreed as to which anesthetic is in all respects the best. There is far greater diversity of opinion, however, as to the value and capabilities and uses of antiseptics. Many surgeons seem unwilling to believe that putrefaction is preventible; others assert that the

* The several lectures in this series are an abstract of certain lectures delivered by me on Systematic Surgery in 1878, and asked for by Dr. Yandell. Much that I say is already known, and has been better said before. Many points which it was proper to dwell upon in the class-room are omitted here. If certain portions which remain be thought too elementary for this place, I

methods in use for this end are not effective, others again that the means are not adapted to every day work, while yet another class regards the dangers arising from putrefaction as of too little moment to demand such an amount of care and trouble to avert them. Having been for some years associated with Mr. Lister in this hospital, and privileged to observe his practice and not infrequently to be intrusted with his wards when he was absent from Edinburgh, I have had abundant opportunity of studying and putting to practical test the doctrines of which he is the exponent. The conclusions which have forced themselves upon my mind are that putrefaction in wounds is, as Mr. Lister asserts, the result of deposit in them of living organisms, the germs of which are present in the air and water; that in consequence of the presence of these organisms certain products are formed, which act locally as irritants and prevent healing of the wound, and which, if absorbed, give rise to constitutional and local symptoms; that these in turn will vary in intensity in different individuals, the differences depending upon, first, the variety of the putrefactive poison, second, its amount, third, the constitution of the patient. As in agriculture, so in surgery, the yield per acre

trust the excuse for their appearance will be found in the fact that they are, in my opinion, necessary for the proper elucidation of the subject.

The authorities to which frequent reference will be made are,—first, John Hunter's Works, edited by Palmer. Second—Anatomical and Pathological Observations, by John and Harry Goodsir, Edinburgh, 1845. Third—Paget's Pathology, edited by Turner. Fourth—Virchow's Cellular Pathology. Fifth—Foster's Physiology. Sixth—Billroth's Surgery. Seventh—Burdon Sanderson on Inflammation, in Holmes's System of Surgery. Eighth—Druitt's article on Inflammation, in Cooper's Surgical Dictionary. Ninth—On the Coagulation of the Blood (Lister), Proc. Royal Society, 1863. Tenth—Contributions to Physiology and Pathology (Lister), Philosophical Transactions for 1858. Eleventh—Chirurgie Antiseptique, by Lucas-Championniere, Baillière, 1876. In this work references will be found to Lister's papers on Antiseptic Surgery in the Lancet, 1867, 1869; and in the British Medical Journal, October, 1868. Twelfth—Contributions to the Germ Theory of Putrefaction by Lister, in the Transactions of the Royal Society of Edinburgh, Vol. XXVII, and in Microscopical Journal, October, 1873.

My thanks are especially due to Mr. A. M. Stalker, M. A., for the care and intelligence with which he has transcribed these lectures from notes taken while they were being delivered.

is governed by the variety and amount of seed sown, and the soil in which it is sown. The organisms are the seed, and vary as the different varieties of the cereals vary among themselves. The tissues are the soil, and vary in their vitality—in their "power of resistance," as John Hunter termed it—as sand, loam, gravel and clay vary.

Lister, to my mind, has clearly shown that an active faith in the germ theory of putrefaction, as taught by Pasteur, will enable surgeons to work with far better chances of success than is otherwise possible; and that by the adoption of certain methods and use of certain substances termed antiseptics, putrefaction can be absolutely prevented. If these doctrines be, as I believe, founded in truth, their final acceptance is but a matter of time. The methods by which the desired end is now reached may, and doubtless will, be changed greatly and in many ways; for it would ill become one to say that the simplest and best modes of reducing these principles to practice had yet been attained, and that future study and future labor would yield no further improvements. But of one thing I am persuaded, and that is that we owe to Pasteur and Lister a very great addition to the means at our command for prolonging life and preventing suffering, which I need hardly add are the legitimate aims of all true surgery.

The antiseptic or Lister's system owes much to its opponents—more, perhaps, than to its friends. It is safe to say that had not its every part been challenged, its every advance rigorously criticised, it would hardly occupy the place which it does to-day. In science, as in literature and in politics, fair and searching criticism exposes error and advances truth. Certainly no doctrine in all surgery has been more mercilessly handled or contemptuously treated, more sneered or laughed at, than this of Lister's. But with truth and logical scientific deduction as its foundation, the waves of opposition which beat against it fortunately serve to show a weak point in its structure of minor importance, here and there, while the solidity of the principle on which it rests remains conspicuously undisturbed.

When seen from Lister's point of view, the elements of surgery on which the practice rests are, in a certain sense, changed. Where the principles are founded in truth they, of course, remain unaltered; but where errors obtained, a better light has enabled us at least to detect their presence; and while we still continue ignorant on many points, the consciousness of that ignorance is clearly a step toward its ultimate removal. Numerous difficulties have already been cleared up, knowledge has taken the place of obscurity, and complexity has yielded to simplicity. Much yet remains to be done.

I wish here to state that while I know no words in which to express what I owe to the teaching and example of Mr. Lister, yet I alone am responsible for the statements I may make in these lectures—statements which I ask may be regarded as simply the expression of opinions formed during my labors in the Edinburgh Royal Infirmary, which begun as house surgeon under Syme, were continued as assistant surgeon to Mr. Spence and Mr. Lister.

The Study of Principles.—The derivation of the term surgery, or chirurgery, indicates very clearly that at one time it was looked upon as a "handiwork;" and those diseases in which manual means were used to obtain a cure were placed under the charge of chirurgeons or surgeons. But from being merely a practical art, surgery has developed greatly in modern times, so that we have now the two well marked divisions of *principles* and *practice*. In this course of lectures I shall speak of the Principles of Surgery; and it is not intended to treat of the Practice, except as illustrative of the main subject. Let me demonstrate what I mean. In the application of a splint to a fractured limb, the principle is that we should command the break above and below the seat of fracture; and from this arise many variations in the methods adopted and in the materials employed. Wood, pasteboard, pillows, etc., are used according to the necessities of each case. Again, the principles of bandaging are to put the bandage on so that it won't

come off, and to make the pressure equable. Different means and materials attain this end in different parts of the body. A third example is the importance of rest and the avoidance of unrest. In the healing of a wound the parts must be kept quiet, and the materials employed for making the stitches must be chosen according to their fitness for this purpose. It can not be right that you should apply indifferently a flexible silk stitch and a rigid silver stitch; or that the stitches may, as you please, be either few and far between, where each has a large area to keep at rest, or many where each has an easy task to perform. The means adopted for securing rest for the various organs of the body when diseased are, in practice, as various as their functions. The eye is kept at rest by confining the patient in a dark room; the brain, by prohibiting reading and thinking as much as possible; the kidney, by employing other organs of the body to perform their functions, such as the skin by the use of diaphoretics; and so forth.

But while we must always bear in mind that we speak here of Principles chiefly, it must be remembered that it is not always possible to refer to Principles. In many cases we can only be empiricists; and it is well that it should be so. This only means that our knowledge has its limits, and that there are still principles to be discovered, and truths to be learned; and in surgery, as in everything else, that part of the science where the search for truth is still going on, and our ignorance is most manifest, possesses the greatest charm for the inquirer. I shall always take the opportunity of pointing out the gaps in our knowledge, which remain to be filled up by future investigators.

Health and Disease.—The subject which surgery has for consideration is disease; and without spending time in considering disease from a surgical, as distinguished from a medical, point of view, let us merely ask the question, what is disease? The simplest reply is, a departure from health. This brings forward the question, what is health?—and to answer it, I shall make use of a figurative mode of explanation.

Health, as a standard, is the normal condition of the human body, which may be represented by a curve, varying in direction at different periods of life, and in different individuals at the same period of life. The ascending part of the curve represents the time of growth and development, from conception to manhood; a more or less level portion then represents the period of maintenance; and this is followed by a portion downward in direction, signifying old age and decay, ending in death. During the first period we have the deposit in the tissues in excess of the removal; and we have, on the one hand, an increase in the bulk of the organism, which is growth, and, on the other, an increasing complexity in the performance of functions, development. During the second period we have maintenance, and the deposit in the tissues is equal to the removal. During the third period—that of decay—the removal from the tissues is in excess of the deposit.

Taking this curve as our standard, we may figure to ourselves disease as a departure from it in a downward direction. It is the result of a misplacement of the same forces which are at work in a state of health, and this misplacement and fall may take place at any part in the curve. A child born of syphilitic parents is weak and puny, and the passage downward to death may occur shortly after the curve is begun; it may be even before birth in a miscarriage. This departure may be very gradual, and may itself take the form of a curve more or less sharp, as in the various forms of illness; or it may be a sudden instantaneous fall as in a fatal accident.

But there is resident in the body a force which struggles against this misplacement—a power of recovery. You may be injured by the passage of a cart-wheel over your leg, fracturing the tibia and crushing the tissues around: but recovery takes place. In the injured tissues growth and development set in, and from the point to which the curve has fallen a renewed upgrowth takes place. The power of recovery may not be able to lift the patient up to his former condition, and the rest of life will be spent on a lower level than the normal one. For example, after an ulcer is healed we have a scar or

cicatrix. The cicatrix is not true skin—it is but an imperfect substitute for it; but this is the point up to which the power of recovery leads the injured tissue.

Action of an Irritant.—The misplacement of the vital forces in disease is termed an *injury*, using this word in its most general sense. An injury is suffered equally when the leg is crushed by a cart-wheel and when pneumonia is caused by a draught of cold air. The injury in these and all other cases is the result of the application of an *irritant*. There may be direct action of the irritant; this we had in the first example, and in all other similar instances, such as wounds, burns, etc.: or there may be indirect action of the irritant; the pneumonia is caused by such; or a swollen testicle may be produced by gonorrhea in this way. The irritants are the cart-wheel, the hot body, the cold draught, the gonorrhea; the injuries are the crushed limb, the burn, the pneumonia, the swollen testicle. Following the application of an irritant, there is generally a certain definite series of changes to be noted. The injury has a life of its own, and the phenomena in this life appear, grow and develop, are maintained and decay. When my hand is burned, the injured part may either get better or it may die, and this upward or downward progress is represented by a curve such as we have spoken of. When the injury is merely local the recovery or death will be local; but it is not always possible to confine the action of the irritant to a limited area, and then the recovery or death will be general; or the area of the injured part may be limited enough, but the part itself be an organ necessary to existence, and in this case also the effects will be general. Observe also that as before mentioned the recovery may be complete or partial.

The Physiology of an Injured Part.—We have now to consider more in detail the physiology of an injured part. There is however one exceptional case which does not admit of consideration in this way. The injury may be so severe and affect so powerfully the vital functions of the tissues, that death of the tissue may take place directly. The passage from life to death is immediate. Putting aside this one exception we note

that a vital process goes on in the tissues after every injury, ending either in recovery or in death. During health there is a constant interchange of materials going on in the tissues. The blood is the agent which is continually occupied in conveying something to the tissues and in receiving something from the tissues. After the application of an irritant the blood still continues its functions, but there is no longer maintained the equilibrium between the two processes of addition and withdrawal. There is now an *increased afflux to*, and an *increased deposit in*, the injured tissue. The materials are there for the maintenance of the vital functions: there is however a misplacement of these materials; they are carried to the injured tissue in excessive quantity, and they are deposited in the injured tissue in excessive amount. In health the functions of the blood are performed imperceptibly and the functions of the tissue are maintained intact; in disease there is an appreciable alteration in the structure and disorder in the functional activity of the affected part.

I have mentioned incidentally that an irritant may act directly or indirectly. A swollen testicle may be due to a kick—an instance of direct action; or it may be due to gonorrhea—an instance of indirect action. In indirect action we have the nervous system acting as a communicating channel for the irritation; in direct action the effect is produced apart from the nervous mechanism. A beautiful experiment of Mr. Lister's illustrates the direct action of an irritant. When the ciliated cells are removed from any part of the body where they exist, the cilia continue their usual lashing motion for *some time* after removal. Mr. Lister removed a piece of the tongue of the frog, and observed with the microscope the ciliary movement going on. He then brought a hot iron wire near the cilia and the movements were quickened. This was withdrawn, and again the speed of the movement fell. The hot iron was again brought near, and quickening was again produced, though not to such a marked extent. It was brought nearer still, and the motion now became slower and at last ceased. When the hot wire was suddenly brought near

the stage of microscope the ciliary movements stopped at once; the ciliated cell was dead. All the effects of the irritant here must have been produced without the intervention of a nervous mechanism, as there was none present. Thus we are able to say with certainty that an irritant may act directly on the tissues.

The foregoing experiment brings out other facts of very great importance. The first effect of an irritant, if not excessively powerful, is to stimulate the part and quicken the movements. If continued longer or if rendered more powerful the irritant depresses the tissues and the movements become slower. And if sufficiently prolonged and sufficiently severe the irritant may cause the death of the tissue. Illustrations of this are constantly occurring. Rub the back of your hand briskly and you stimulate the tissue and it becomes red. Apply a stronger irritant in the shape of a mustard poultice and you produce a blister, in which the vitality is depressed. With a severe irritant, as a red hot iron, you destroy altogether the life of the tissue. But the strength of the irritant is not the sole condition which determines its effect. A second condition on which the action depends is the strength of the tissue. On any one whose work requires long periods of sitting, the continued pressure on the gluteal region produces no injurious effect; but let the same individual be confined to his bed for some time with illness, so that the vitality of his whole body is at a lower level, and under these circumstances the pressure that was formerly borne with ease can no longer be endured. Bed sores form on the gluteal region: in other words the irritant which formerly produced hardly any effect now depresses and kills the tissue. Again, it is an unsafe thing to apply a mustard poultice to a child who is suffering from a severe attack of measles, because that which formerly acted merely as a depressant may now, in the enfeebled state of the body, go much further in its effect, and a sloughing ulcer may be formed; that is, the tissue may be killed. The action of an irritant depends then, first, on the strength of the irritant; and secondly on the strength of the tissue.

Such is the action of irritants and their mode of causing an injury. There are three elements in every part of the body which come into prominence at any part which may have been injured. These are the *blood vessels*, the *blood*, and the *tissues* surrounding the vessels. The study of the physiology of these elements is of the utmost importance if we wish to understand the pathological changes that take place in them.

The *blood vessels* which come into prominence in this consideration are chiefly the capillaries and small arteries. The walls of these are thin and membranous, and are probably a continuation of the epithelial lining of the larger arteries. The feature we have especially to note about them is that they allow of free outflow and influx of some of the elements in the blood and surrounding tissues.

The *blood* consists of two elements, the liquor sanguinis or blood-plasma and the corpuscles. The corpuscles are of two kinds, the yellow and the white. The white are much the less numerous. They are more or less globular in shape, and possess a nucleus. They display amœboid movements, shooting out and withdrawing processes of their protoplasm, and by this means moving about from place to place. They absorb substances from without, and excrete effete matters. Growth, development, maintenance, and decay go on in each of them individually. Thus we are able to predict that their function will involve active movement. The yellow corpuscles (red when seen in mass with the naked eye) are much more numerous than the white corpuscles, but perform a merely passive function, carrying oxygen to the capillaries where it is appropriated by the tissues, and carrying back the effete carbonic acid which is excreted by the tissues. In the ordinary state of the blood the corpuscles float freely in the liquor sanguinis, but there is a remarkable change which the blood frequently undergoes, and the conditions and nature of this change are of special importance in a pathological respect. When blood flows from a wound it clots or coagulates. The importance of this change may be imagined when we hear John Hunter saying that there is more to be learned of the use of the blood in the animal

economy from its coagulation than from its fluidity. Hunter held that wounds may heal by blood-clot, and of this we shall have a good deal to say hereafter. In the meantime let us direct special attention to the nature of coagulation.

For a long time it was held as an unquestioned truth that the coagulation was simply the change attending the death of the blood. But I trust to be able to show you that it is anything rather than a process of death. Several distinct steps are observed in clotting. The first change we observe when blood is poured out of the living body into a vessel is that it grows viscid and flows with difficulty. It then passes into the form of jelly or clot. If you observe the surface of this jelly narrowly you will see globules of a watery-looking fluid gathering on it. If the vessel be transparent it will also be noted that a layer of this watery fluid lines the sides of the vessel, and that in fact the clot has now contracted greatly and is suspended in the fluid. If this clot be washed the red corpuscles will be carried away. What is left is a white stringy material, fibrin. This fibrin does not exist in the fluid blood. It is formed by a chemical union of two substances—fibrinogen and fibrinoplastin. The fibrinoplastin is in the white blood corpuscles, and the fibrinogen is in the blood plasma. A third element is referred to by some observers—the fibrinferment—which is supposed to set up the change. But this we are really ignorant of as yet. The watery fluid in which the clot is suspended is serum or the liquor sanguinis after the fibrinogen has been subtracted from it to form the clot.

A modification of the process is observed when the coagulation takes place very slowly. The colored corpuscles form rouleaux, and when the clotting takes place quickly these rouleaux become entangled in the meshes of the fibrin that form; but if the formation of fibrin is from any cause delayed, or takes place very slowly, these rouleaux have time to sink to the bottom, which they do readily enough. We then have a clot which is colorless. This may be produced by cold or the addition of alkalies to the blood. And just as these reagents produce a colorless blood-clot by delaying the forma-

tion of fibrin, so on the other hand it may be produced by increasing the size only of the rouleaux. As long as the colored corpuscles float singly or in small rouleaux, they will not sink quickly, just as one feather may float for a time in the air; but just as a bundle of feathers comes down immediately, so does the large rouleaux of colored corpuscles sink rapidly. The formation of rouleaux seems to be hastened, and they collect in large masses in the blood of an inflamed part, possibly by rendering the corpuscles stickier; and hence we have the appearance known as the "buffy-coat"—a layer of colorless clot on the surface of the colored clot. The "capped" appearance of the clot is most marked when a buffy coat is present; in it the fibrin is increased relatively to the blood corpuscles. The contraction is due to the fibrin; hence, the greater capping seen when the blood corpuscles are in small amount.

What is the cause of coagulation? We have coagulation when the blood flows into an ordinary vessel. We frequently have coagulation within the blood vessels when they are injured; and we have clotting between the lips of a wound in which the tissues are injured—the injured tissues are depressed, their vitality is lowered in consequence of the irritation.

An aneurism may be cured by the formation of a blood clot in the sac: the walls of the cavity are in a condition of lowered vitality. If a needle be pushed through the wall of a living vessel through which the blood is flowing, and then be examined after some time, a clot is found to have formed around it. From facts such as these the conclusion has been arrived at that clotting takes place when the blood comes into contact with dead or dying matter, or with tissues which by the application of an irritant have been depressed: their vitality has been lowered. An example of dead matter will be afforded by the jar into which the blood is poured, or by the needle passed into the cavity of a living vessel. An example of depressed tissue will be found in the wall of the aneurismal sac, or in the lips of a wound which are in a depressed state of vitality, and to that extent are dying—are an approach toward death.

In the *tissues*, the cellular elements are those which more particularly claim notice from us as surgical pathologists. And when I speak of the cells, I do not take the word in any one of the numerous meanings which have been attached to it. Whether we take it as meaning a neucleated mass of protoplasm with a cell wall, as Schwann would have us do; or whether we discard the cell wall, with Max Schultze; or whether we hold with Stricker, that a simple mass of protoplasm, without nucleus or boundary wall, is the cell—matters not. That thing which is the active agent in the tissues, which takes up nutriment and elaborates it to form muscle, bone, etc., is what we understand as the "cell." The body consists of a mass of innumerable cells; and the sum of the life of these is the life of our bodies. Each of them is produced from parents,—grows, develops, is maintained and decays, and can act, to a certain extent, an independent part when occasion requires it.

The most convenient way of examining the tissues and the circulation, in a state of life and health, is to do so in some transparent membrane which may be suitable for microscopic purposes; and such a membrane is ready to hand for us in the web of a frog's foot, or in the mesentery of the frog. On directing attention to a particular vessel we observe the current of blood hurrying on swiftly in the center of the tube, but at the sides there is perceptibly much slower movement. Here the colorless corpuscles are seen moving along very slowly, and now and then sticking for a time to the wall of the vessel. In such a membrane we can observe the pathological changes which follow the application of an irritant; and this brings us to a consideration of the phenomena to be observed in an injured part, *i. e.*, an irritated part. In the web of the foot irritation may be produced by the application of heat, or by such agents as mustard or chloroform. If we choose the mesentery of the frog for observation, the exposure to the cold air is all that is necessary for irritation. Attention is now to be directed (*a*) to the vessels, and (*b*) to the blood flow.

In the *vessels*, the first thing to be observed is contraction, which, however, is very evanescent, and has often not been observed at all. Following closely on this there is *dilatation* of the walls, and increase in the caliber of the vessel.

The *rate of the blood flow* is, in the first instance, slightly quickened. This, like the contraction of the vessels, is merely momentary, and is quickly followed by a slowing of the current, so that you can observe the size and shape of the corpuscles quite easily. This slowing goes on increasing until complete stoppage or *stasis of the blood flow takes place*. This stasis and the dilatation of the vessels are the essential results of irritation. Their causes are exceedingly obscure, and we can not speak with certainty on any point here involved. But still something has been done of late years to clear up the difficulty; and I will now briefly communicate the results of recent researches.

First, as to dilatation of the vessels. This follows on irritation; and you will remember that I said before that irritants act in two ways, directly and indirectly—directly on the tissue to which they are applied, and indirectly through the nervous system; and that the effect of an irritant, although at first stimulant, is mainly depressant. In the subcutaneous tissue of the frog, there are spaces filled with pigment, which communicates a color to the skin. In a state of health the frog is light in color, but when the frog is out of health the color darkens greatly. Microscopic observation reveals that during health these pigment spaces are small and compact—the frog is of a light color; but that during an unhealthy state, they expand greatly by shooting out processes—the frog is dark in color. When the web of a healthy frog is irritated, the pigment spaces expand in the irritated area; in the surrounding parts they remain in their normal contracted condition. We can see the effects of the irritant on the tissue composing the pigment space; and we are justified in assuming that the irritant acts in a similar way on the walls of the blood vessels. They also lose their power of contraction; their tissue is also depressed or injured, and the injury is the result of the de-

pressant action of the irritant. The evanescent contraction sometimes observed in the early stage is due to the stimulant effect of the irritant. The irritant acts directly on the tissue to which it is applied.

Somewhat different is the case of the irritant which acts indirectly through the nervous system, as, for example, when an attack of pneumonia follows exposure to a draught of cold air. It has been shown that if the sensory nerve of the ear of the rabbit is stimulated, this stimulation is followed by dilatation of the vessels of the ear; this dilatation is due to a change in the condition of the vaso-motor center from which the nerves which supply the walls of the vessels take their origin. This change in the vaso-motor center is one of depression; it loses its command over the vascular walls—the blood vessel dilates. We have, I believe, in this experiment the clue to the explanation of the way in which the indirect irritant acts. The sensory nerves of the part to which the irritant is applied convey an impression to the vaso-motor center; it is depressed, and as a consequence the vessel dilates. There is undoubtedly a nervous connection between the skin over an organ and the organ beneath—between the skin of the chest and the lung; there is also an intimate nervous connection between organs in functional relation, as the ovary and mamma, the urethra and testicle—during ovarian irritation the mamma is turgescent, during an attack of gonorrhea the testicle may inflame.

Secondly, the stasis requires explanation. And I now ask you to go back to that part of these lectures where I spoke of the coagulation of the blood. Remember that I tried to impress upon you that there were three stages in clotting—viscidity, jellying and contraction. We also saw reason to believe that these results followed when blood was brought in contact with depressed tissue. The dilated vessel indicates depression. The blood in contact with the dilated vessel becomes sticky or viscid; this viscidity first slows its flow, and if the depression continues, the viscidity increases, the blood flow stops—stasis takes place. This stasis only occurs in the

irritated area, and at the edges of the stasis area, where the blood current is still going on, the stasis blood is constantly being washed away by the fluid blood. This was shown first by Lister, and he first drew the deduction that the stasis is due to the condition of the vessel walls.

In consequence of the dilatation of the vessels in the irritated area we have an increased quantity of blood in and necessarily an increased afflux to the injured tissue. It remains now to consider how there is an *increased deposit* accompanied by an *increased production* in the injured part.

The increased deposit comes from the blood. As you are all aware during healthy nutrition, blood plasma is constantly flowing through the walls of the capillaries. It is poured out in excess in an injured part, as you may observe from the fact that an injured muscle is softer than a healthy one. If you observe also the dressing that is taken off an incised wound, you will see that it is saturated with a clear fluid. This exudation is the blood plasma. There is increased intra-vascular pressure in consequence of the stases in and increased afflux of blood to the injured part: as a result there is increased exudation of the fluid portions of the blood into the irritated tissues through the dilated vascular walls. The thinning of the vascular walls is also an important factor in the process. The fluid portions of the blood pass more easily. Of the two kinds of corpuscles I see no reason to believe that the colored perform any essential part in an irritated tissue. They are certainly to be found outside the vessels, but the rupture of the thin walls of the dilated vessel will account for this. It is different with the white corpuscles. Williams long ago pointed out the tendency of these bodies to cling to the sides of the vessels. Addison in 1842 maintained that pus corpuscles and white blood corpuscles were identical, and that the latter migrated through the walls of the capillaries: and though the hypothesis was strengthened by Waller, who in 1846 said that he had seen the migration going on, yet the statements of these observers were unheeded for many years, until the same story came from Germany: after Recklinghausen in 1863 published

the results of his study of the white corpuscles, and proved that they had a capacity for movement in themselves. He directed attention to what had been previously shown by Wharton Jones in 1846. He observed them shoot out and withdraw their protoplasmic processes, and by treatment with coloring matter he discovered that they had the powers of absorption and excretion. In 1868 Cohnheim demonstrated that when a part is irritated the colorless corpuscles collect in great numbers, and that by means of their processes they can make their way through the membranous walls of the capillaries. This process takes place normally in the healthy tissue, though it requires great patience to see it; but it can be seen without difficulty in an irritated part. I have seen these corpuscles pass through, and after their passage move about in the surrounding tissues and there divide.

But this is not all: in addition to the increased deposit of the fluid and corpuscular elements of the blood, there is increased production in the irritated tissue. This increase is due in part to division of the migratory white blood corpuscles, but in an irritated part there is cell proliferation also. The cellular elements proper to the tissues multiply by rapid division. This is due, I believe, to overfeeding of the tissue. This proliferation goes on in health as the normal method of growth, but in disease it is in excess. It must not be supposed that the increased production is an evidence of increased vitality. The increased proliferation is due to the overfeeding of the tissue; the normal equilibrium is lost, the cell elements are overfed, they proliferate, their normal functions are in abeyance like a hot house vine highly manured, which brings forth many bunches which if allowed to remain will never come to maturity, like the stunted trees in a wood which is never thinned; in both there is an increase in the number of the bunches and plants at the expense of the parent vine and the neighboring trees. With an increased growth we have decreased vitality, a tendency to degeneration and decay; hence the numerous cell elements in an irritated tissue do not go to form normal tissue, but form various aborted products, the

chief of which is pus. It is at present an unsettled question as to the chief source of the pus. Is it due mainly to proliferation of the migratory white blood corpuscles, or to proliferation of the original cell elements of the part? The truth probably is that both causes are at work in highly vascular tissues; in nonvascular parts, as shown by Goodsir in cartilage, the original cell elements are the main if not the whole source of pus supply.

The formation of "Inflammatory Lymph."—When these changes have taken place, and the balance of nutrition has been destroyed, there is produced a substance which to some may appear altogether of a peculiar nature. There are present in the irritated tissue the liquor sanguinis, which has been poured forth in excess, and the white corpuscles, which have found their way through the walls of the vessels. In these two substances have we not all the elements for the formation of the fibrin of a blood clot? The irritated and depressed tissue is there *ex hypothesi;* the fibrinoplastin and fibrinogen will, in an ordinary case of irritation without rupture of the vessels, be unincumbered by the presence of the yellow corpuscles. All the circumstances favor the formation of the colorless blood clot. But you will not find that the identity of the substance that forms in an irritated part with a colorless clot is recognized in the name that is given to the former. "Inflammatory lymph," the name referred to, is an objectionable expression, for this reason, that it multiplies distinctions where none really exist. It prevents us seeing the application of principles of sound physiology to the treatment and examination of pathological questions. And it is because I am so desirous that you should clear your mind from the confusion of ideas that is sure to follow the using of different terms for the same thing, that I have been thus minute in the treatment of the physiology of the blood. And henceforth you will understand that I use the terms "inflammatory lymph" and "colorless blood clot" as synonymous.

Process of Recovery.—At several stages in the preceding series of events a stop may be put to the process, if the irri-

tant is withdrawn. In simple language "recovery" may take place. When there is active congestion and dilatation of the vessels, withdrawal of the irritant produces recovery of tone, and at the venous extremities of the capillaries the corpuscles commence to break away and resume their normal course—a process which soon spreads over the whole affected part. If there has been stasis of the flow, the way of recovery is the same. If there has been effusion of the liquor sanguinis and white blood corpuscles into the introcellular spaces, these are again absorbed by the vessels and resume their normal functions. But if "inflammatory lymph" has formed and occupies a definite area, there is the possibility of a new mode of recovery; and the clear comprehension of this last is of the utmost importance in the Principles of Surgery. All the injuries which call for surgical interference present examples of it, and accordingly the whole question of the *Process of Repair* now opens out before us.

GALVANISM IN THE TREATMENT OF SCIATICA.*

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Until the early part of 1876 my ideas as to the *modus operandi* of electricity were crude, aught but clear, and I fancy I do my profession no injustice by saying that my views were on a par with those entertained by the major portion of its membership. Clinically I was at a loss to appreciate the value of one current over the other.

The question was often asked me by young men on the threshold of practice, "What kind of battery shall I buy—*i. e.*, which will be the more serviceable in general practice, viz., a galvanic or a faradic?" I invariably advised the pur-

* Read before the New York Academy of Medicine, February, 6, 1879.

chase of a faradic machine, giving as a chief reason therefor, my belief that they could do less harm to their patients with this than with the galvanic.

In the hospital we have had for several years both kinds of apparatus, and with both I have had a kind of valueless experience—valueless, I say, because I had kept no very reliable notes as to the clinical effects of the respective currents. If one battery chanced to be out of repair I used the other, and *vice versa*. True, I had been taught that the galvanic induced chemical changes which the other could not; that the one was a powerful agent for harm, while the other was inoffensive. So that I used the one cautiously, employing always a mild current, with the poles placed as the books directed; and the other (the faradic) I used lightly, because I could not get our patients to tolerate a strong current. The cases, be it noted, were, however, those of infantile spinal paralysis; and while we employed the currents in neuralgia in the out-door department, but little benefit was obtained.

Just here let me state that I have seen muscles in cases of spinal paralysis respond to galvanism and not to faradism; have seen those same muscles, later on, respond to faradism; have kept them under electrical treatment year after year, and still those muscles to-day are in such a condition that I am led to believe a perfect recovery will never take place. Yet it is a law said to be well established, that if we find a muscle with electro-contractility to faradism abolished, and yet respond, however feeble, to galvanism, a favorable prognosis may be given. My own observation, extending over several years, leads me to consider this as a law by no means well established.

When speaking with intelligent and prosperous medical men as to certain good results I have obtained from galvanism, they will say, "Well, that has not been my experience." And when I question them as to the kind of battery they employed, especially as I see in the office a faradic machine, the answer will come, "Why, that galvano-faradic machine," or "that electro-magnetic battery you see on the table."

Then, again, one hears that this patient has had "electricity" for such and such a length of time, without any good result. The kind of electricity used is not specified, and this important point is not learned unless by a close cross-examination.

Now, why does there exist such widespread misconception as to the uses of the two currents? It can not be that our electro-therapeutists are unwilling to communicate their knowledge; it can not be that our literature is poor in treatises on this subject.

I venture to suggest that there is too much theory as to the peculiar mode of action; too much space devoted to a special form of battery; too many wood-cuts of apparatus; too much of the business style of reporting cases—in fact, too few cases reported after the manner in which cases in other branches of medicine are reported. We read of too many miraculous cures; and then that unfortunate term, *séance*, carries with it an air of mystery from which the practical man recoils.

It was in January, 1876, as I have already intimated, that my attention was directed more particularly to the treatment of sciatica by reading, with much interest, a report of six cases of this obstinate affection treated with galvanism. These were reported in the Lancet for December 18, 1875, by Mr. S. J. Knott, Medical Superintendent of Galvanism in St. Mary's Hospital.

The cases, it seems to me now, might have been improved more permanently, if the strength of the current had been greater, and the applications made daily instead of tri-weekly, in some instances. In only one case does he speak of the length of the sitting, and here it was "twenty minutes all over the part affected." He does not tell us the relative position of the poles, and I judge from his report that he attaches little importance to the relative course of the currents. From the expression "all over the parts affected," just quoted, it would seem that the *purely* constant current was not always employed; *i. e.*, it would seem that while he used the galvanic current, which is known as the constant current, he really produced results by moving the electrode from place to place

(*interrupting* the current), for which he condemned the faradic, namely, "contraction of the enfeebled nerve." For it is well known that contractions take place on opening and closing the current. I determined to try what could be effected by longer and more vigorous applications.

Until Mr. Knott's cases were published, cases reported in such detail as to make an impression on my mind had not fallen under my eye. From that time forth I realized the necessity of records, and on such records my present paper is based. Be it observed, however, that the histories are not as full as I should have liked, and the applications were not always made by one sufficiently experienced.

Naturally, where a change in service occurs three or four times a year, as it does among the members of our hospital staff, some men enter more fully into the spirit of a subject than do others, and results vary accordingly.

To enhance the value of such as I shall report, I have made an effort to obtain the ultimate results of cases treated by galvanism; and with a long list of names in my hand, I have traveled throughout the length and breadth of this great city, winding my way through dark alleys and clambering up rickety stairways, to find, in many instances, that my patient had either given the wrong address or moved to parts unknown.

Such records, then, as I have been able to complete it is my purpose to offer as a clinical contribution to this perplexed question. The battery used almost exclusively was the Leclanché, consisting of thirty elements. A glass jar contains a solution of sal ammoniac and water, in which both poles are placed: the positive is composed of carbon, packed or set into a mixture of powdered peroxide of manganese and carbon, and hermetically sealed in a porous vase; the negative is composed of a plate or pencil of amalgamated zinc. This makes up the element.

This, after some varied trials, has been found to best meet the requirements for stationary hospital battery. A portable battery, with from eighteen to thirty-two cells, can be employed with good result.

CASE I.—*Four months' standing; cure after two weeks' treatment; no relapse after fifteen months.* On the 6th of September, 1877, A. McG., a laboring man, forty years of age, applied at the out-door department of the hospital for relief from pain and lameness in the right lower extremity. For four months he had been suffering by day and by night, though more acutely by night, while the pain he referred to the popliteal space, sharp and lancinating in character, began about the hip and came on paroxysmally. He knew of no cause, unless it were exposure to draughts of cold. The malady had been growing worse, and the patient had begun to feel that his suffering was intolerable. He had always enjoyed good health, although addicted to a free use of alcohol. He claimed that some relief was obtained by walking.

On pressure directly over the sciatic nerve, at its exit from the pelvis, pain was felt along the posterior surface of the thigh down into the popliteal space. The positive pole, with the sponge well moistened, was applied over the lumbo-sacral spine, and the negative in the popliteal space. A current as long as could be borne was employed for five minutes, after which the patient experienced much relief.

7th. Considerable pain last night from knee to ankle, and this morning it has returned. A current of the same strength for ten minutes employed this morning, the negative pole being moved so as to embrace in the circuit the locality of pain. He does not feel so marked relief from this application as he did from the one on the morning preceding.

8th. Rested well during the night, and feels encouraged.

10th. Had a little pain during the night, and this morning there is a sense of numbness in popliteal space.

11th. Worked the greater part of yesterday, something he has not been able to do for several weeks. Had no pain during the night, but this morning has occasional darts of pain down the limb.

22d. A strong current has been used nearly every day to date. Until the 15th the paroxysms were mild and infrequent, although none came on during the night. Since that date none have occurred. The patient is discharged, with directions to return in case of relapse. He did not return.

January 13, 1879. I saw him at work, when he assured me that he had not had a twinge of pain since September, 1877; that he is free from lameness—is in fact cured.

CASE II.—*Three years' standing; relief after four applications; relapse; not treated again.* E. C., female, domestic, aged forty-five, anemic, presented for treatment April 10, 1878. She is quite lame this morning, and suffers from a "biting gnawing" pain in the distribution of the sciatic right side. There is always present a sense of soreness, and to this is added the paroxysmal attacks producing convulsive movements of the flexors of the limb. These occur most frequently during the night, and such has been her history for three years. No adequate cause can be found, unless it be found, as she claims, in working and sleeping in a basement. The veins of the leg are varicose, however, and this condition may stand in a causative relationship.

Six dry cups are applied along the course of the sciatic, from its exit to the lower third of thigh, immediately after which she expresses herself as feeling much better, and is able to stoop with ease—an act before this difficult of execution.

12th. She had no pain on the 10th or on the 11th, but this morning it has returned in a light degree. She slept both nights without waking once, something she has not done for months. Nine cups to-day, immediate results of which not recorded.

May 4th. The good effects of the cupping have not continued, and she is transferred this morning to the electrical room; and a strong constant current—positive pole near exit of nerve and negative in popliteal space—for about five minutes, is followed by immediate and complete relief.

6th. Reports that she has felt no pain of any import since 4th. Repeat the application in same strength and for same duration.

7th. Free from pain last night. Another application.

8th. Passed a night of suffering, though she is comfortable this morning. She never came after this date, and on February 2d of present year I succeeded in finding her. She was still lame and suffering as she was when she first made application for treatment last spring. She claimed that her work prevented her from continuing her attendance; but from the way in which she spoke, I judged that the relief was not sufficiently great to hold out any encouragement.

CASE III.—*Three months' standing; six applications; cure and no relapse after twelve months.* W. McG., farm hand, aged fifty-two years, came under treatment January 2, 1878, with a history of sciatica of three months' duration, coming on without apparent

cause. The pain was worse after he had been sitting or lying a while. He was suffering considerably when the examination was made. Galvanism was ordered daily, and the applications were made only every other day, and the current was not used as strong as was directed. The patient had in all only about a half dozen sittings; and it is recorded that after the *mild* currents he felt no relief, while after the *strong* he felt much improved. The case, however, was cured, and up to the present time there has been no relapse.

January 10, 1879. I obtained the above information regarding his cure from parties with whom he stopped. I have since heard from the patient, who fully confirms this report.

CASE IV.—*Five years' standing; eight sittings; cure and no relapse after five months.* J. E., aged fifty years, laborer, applied for relief August 27, 1878. He was quite lame, and complained of pain in the distribution of right sciatic from exit to ankle. There is a marked degree of stiffness about the hip-joint; in the dorsal decubitus the thigh can hardly be flexed to a right angle, because of muscular resistance and pain, which is referred to the posterior surface of the limb; the same resistance and pain are met with on ab and adductions to normal limits. There is perceptible atrophy of the gluteal group, and the thigh measures one inch less in circumference than its fellow, while the leg at calf shows no atrophy. He dates his troubles to an overstraining and contusion six years ago, and though active symptoms were late in following, it seems probable that his ideas as to cause are correct.

The first symptoms experienced were weakness, easily induced fatigue in this limb, slight pain toward night. This pain soon assumed a darting character, recurred quite frequently, and was worse at one time than at another. During the two or three years just passed these pains have been very severe, and the lameness has increased *pari passu*. There is no history of rheumatism.

A strong current, as strong as he would bear, was administered daily, the positive pole over the trunk of nerve, and the negative in distribution of the same. After seven or eight sittings he was relieved, and did not call again until January 15, 1879, when he came at my request, reporting that he has had no pain about hip or thigh since the treatment last fall; that he can work all day and sleep all night on the side which was the seat of disease (this was impossible before galvanism was used); that the heat and natural feeling have returned to the limb. He says that he has occasionally slight pains

in the muscles of the calf and around the knee, which have come on lately from exposure. For these salicylate of soda is prescribed, and in less than a fortnight he is relieved.

The first and fourth of the cases just narrated were treated with strong currents, and most excellent results were obtained. The second was treated by a member of the staff just coming on duty, and lacking that experience in the administration of electricity which is necessary to success. With four applications properly made, the relief should have been such as to encourage the patient in continuing until a cure had been wrought. The third case did well, although only two or three applications of a very strong current were made, and the testimony is that prompt relief followed each sitting of this nature.

The number of elements usually employed when a "strong current" is spoken of, varies according to the condition of the battery and the sensibilities of the patient. Some patients can not tolerate more than twelve or fourteen cells, and around the sponges an erythema is produced. Then again a patient may be able to bear eighteen cells one day, and the next day the battery may be working so that twenty-four, or thirty even, are borne quite as easily. We first test the strength on our own hand, then place the electrode on the patient's limb, and add as many more cells as he will bear. As illustrative of the difference in the administration of galvanism, the following cases will serve:

CASE V.—*Twelve months' standing; decided relief under vigorous applications of galvanism; case protracted under a milder current; ultimate result good.* December 22, 1877, B. D., a coachman, aged thirty-eight years, came under treatment for a sciatica of left side of one year's duration. By reason of his occupation he had been exposed to wet and cold at all hours of the night, and to this exposure he attributed his disease. At first his suffering was brought on only by prolonged exertion, but latterly the pain has become constant, and is felt from hip to ankle. Sharp attacks come on frequently, and these seize him on rising from bed or from a sitting posture long maintained. Changes in the weather seem to aggravate his symp-

toms. In bed he often finds relief by pressing his foot firmly against the foot-board. A descending current this morning, as strong as the patient will bear, for about eight minutes, is followed by complete relief immediately.

23d. Was remarkably well yesterday afternoon, and had a good night's rest up to four o'clock, when the pain returned. He avows that this is the "best night I've passed for four months." The pain this morning does not compare with that of previous mornings. The current is repeated.

24th. Improvement is very marked. He has had no acute pain since date of last note—only a dull sensation in the limb. He walks now with comparative ease. A current of medium strength is employed to-day.

26th. Had slight pains last night, though now feels much better. A strong current.

30th. About well; a current of medium strength now used.

At this time our patient falls into other hands, and the applications are very mild and the notes very diffuse. The assistant who takes charge of the electrical room now fails to recognize the indications in this particular case, and the treatment for a while is thoroughly unsatisfactory. Yet despite these adverse circumstances it was observed, on the 3d, 7th and 9th of January, that he was still free from pain, unless it chanced to storm.

February 21, 1878. It is recorded that he feels very well, with the exception of an occasional pain about the ankle, and a little weakness of the limb. He did not call again, and on visiting his home February 3, 1879, I saw his sister, who reported that he was working all the while, was free from lameness and pain, and but for an occasional ache just before a storm, would scarcely know that he had ever had a sciatica.

Case VI.—*Three months' standing; treatment interrupted by a complication; subsequently resumed and cure established; examination made fourteen months afterward.* On November 4, 1877, C. F., a cabinet maker by occupation, aged thirty years, came to the hospital with a history of pain in the distribution of the superior branches of the sciatic nerve of right side, dating from strain while lifting three months ago. The pains at first were trivial, and were confined to the lumbar and gluteal regions, only a small portion of the thigh being included. Three weeks ago, however, he was guilty of the same indiscretion, and the pains were aggravated; yet not suffi-

ciently so to prevent him from working. No treatment was adopted until December 4th, by which time the pain became so acute that he had to give up his position. He had likewise lost flesh rapidly. In this interval he had applied at another dispensary for relief, some form of electricity having been used without benefit. This morning a strong current for ten minutes brought about almost entire relief from the pain.

5th. Had no pain yesterday after leaving the electrical room, but after he had retired to bed the pain returned and lasted all night, subsiding about daybreak. This morning he complains of pain, though it is not so severe as on yesterday at same time. After the application to-day gets perfect relief.

6th. Not until two o'clock this morning did he have any pain at all, but at this hour it came on with such intensity that he had to arise and walk the floor till the paroxysm was over. This morning he was able to ride in a street car—something he has heretofore been unable to do, so sensitive was he to the jolting.

7th. During the day easy, but at night suffered a little—nothing, however, to compare with former nights.

8th. Rested well during the entire night.

14th. Has been treated with the current every morning since date of last note; and every morning for the past four days, between the hours of four and six, sharp attacks of pain have come on regularly, while during the day he has had occasional mild attacks. There is observed a swelling over the sacrum to the right, tender on pressure, but without extra heat. The current is not borne well on account of the hyperesthesia, and is discontinued, while a fly blister is ordered to the swelling already observed. The pain, it is likewise observed, has been mostly confined to this locality.

22d. The pain about the seat of the swelling has disappeared since the application of the blister, but it has continued along the thigh as usual. Galvanism is recommended, and is applied daily; when it is recorded on the 26th, no pain whatever—has worked every day since the 22d. 30th—No recurrence; discharged.

January 22, 1879. At my request the patient called for examination. I find him much stouter, free from any lameness, able to work every day, sleeping well every night, free from pain in hip or thigh; but when the weather changes he sometimes has a little pain over site of former swelling. Has not had the first symptom otherwise of a relapse.

The case just reported is of interest in that a possible connection is shown between the sciatica and the lesion over the sacrum. We see how this lesion, being of a mildly inflammatory character, was made worse by the galvanism, even though used, as some would claim, as a counter-irritant, while it was relieved by an undoubted counter-irritant; and further still how, when this was relieved, the sciatica persisted and yielded only to the strong current.

It is not my purpose to discuss the mode of action—that would be an endless task. Some there be who may claim that by applying the agent with such intensity, a counter-irritant effect is produced and not a galvanic. What matters it whether it be counter-irritant or sedative, so that the patient is cured and no injury is done. No man can appreciate more fully than do I, the necessity of caution in the use of electricity; and he who doubts can but refer to some remarks on this very subject, made in a paper on the "Paralysis of Potts' Disease," which I read at a meeting of the New York Neurological Society the early part of 1878, and published in the Journal of Nervous and Mental Diseases for April of the same year. What I am arguing for now is the judicious use of the currents; and it is judicious, I honestly believe, to use a strong current from a constant battery in cases of severe sciatica. In addition to facts which I have already placed on record, and facts which I am still to produce, I take pleasure in quoting from the late Dr. Anstie the following:

"More especially in sciatica it would really, with our present knowledge, be a decided neglect of duty were we to allow the disease to run any considerable length without giving the constant current a thorough trial."*

Dr. Anstie, however, seemed to be afraid of a strong current, although on p. 262 he concedes that in neuralgia of the limbs a more powerful current is required—even twenty cells.

To still further illustrate the difference between the results which follow a notable counter-irritant and the strong galvanic current, two or three cases are introduced.

* Neuralgia, etc., N. L. 1872, p. 266.

CASE VII.—*Eight months' standing; cured by the actual cautery, and relapse at end of six months without apparent cause; cured again by galvanism, and no relapse at end of fifteen months.* H. H., a car conductor, aged twenty-nine years, who applied May 24, 1877, for the relief of sciatica of left side, furnished a typical history of the same running over a period of eight months. His idea as to the cause was that exposure incident to his vocation had induced the disease. His most severe attacks of pain occur during the night, and while he is very lame, he must keep at his post or leave his family to starve. The rumbling car, too, but aggravated his symptoms. I advised galvanism, but he could not leave his car long enough to call at the office for the application of this remedy. One afternoon, June 7th, he called and the actual cautery was applied at points along the region of pain. This was repeated a week later, and complete relief was afforded. He continued his duties as conductor, and no relapse occurred until six months later, when the pain returned with increased violence. He knew of no provocation. He managed to come in twice a week for the application of a strong current, and at the end of a fortnight, four sittings having been held, he had obtained perfect relief. Four months later he suffered from neuralgia of the anterior tibial, *right* side, and of the circumflex, *left* side. A cure was effected in both nerves by two or three applications of a strong current.

At my request he called February 5, 1879, and I find him free from a remnant even of his neuralgias. He has had no return at any time of pain in the sciatic, or in the other nerves. For nearly a year he has been a car driver, and his exposure to the weather is greater than it was formerly.

CASE VIII.—*Six months' standing; cure; relapse at end of ten months from exertion; later symptoms not severe enough for treatment.* February 25, 1878, J. C., a night watchman, aged twenty-seven years, applied at the out-door department for treatment. He suffered from an active sciatica, right side, which had been induced most likely by exposure in a manner the details of which I omit for lack of space. This occurred about six months ago. The pains were light at first, then gradually became more severe until he had to give up his occupation and resort to his bed. Here he had been for six weeks, when he hobbled into the office of the hospital, and he had been treated (so patient says) for hip disease. Suffice it to

say that, during this period in which he was confined to his bed, the suffering was very great. The acuteness began to wear off a little, and he was thus enabled to leave his chamber. The weather, I may remark in passing, exerted no influence on the disease, but standing provoked the symptoms. He is in great pain this morning, and can hardly remain quiet long enough for an examination. A strong current—the positive pole over the nerve at its exit, and the negative over distribution of the same—gives much relief.

March 5th. It is recorded that he has been receiving a strong current daily since the 25th ult., and each day reports himself as better than on the day preceding. He is so far relieved that he can return to his work with pleasure, and does not report himself again until April 22d, when it is recorded that during the past four weeks he has had almost entire relief, though within a day or two he has had a return of pain not severe in character. After a single sitting of ten minutes he obtained relief.

February 3, 1879, nearly ten months later, I visited him at his home, in order to acquaint myself with his present condition. I learned that from April to Thanksgiving Day in November, he had no pain or lameness whatever; that on that day he attempted to lift beyond his power, when he felt a sharp pain in the hip, and so severe was the shock that he fell to the ground. The old symptoms returned, though with nothing like the severity or the frequency of those which characterized the original attack. On examination, I found one inch atrophy of the thigh, and a tingling sensation in the distribution of some of the branches of the sciatica, as I pressed my finger over the trunk at its exit. His duties are such that he can not spare the time for treatment, especially as the annoyance is of such little moment.

In the seventh case, it will be seen that the most powerful of counter-irritants effected relief, yet the pains recurred in less than a half year, while the patient was exposed to less provocation than he was after he had been relieved by the galvanism. Now fifteen months have passed, and no relapse. In the eighth case a relapse occurred, but there was sufficient cause therefor; besides the symptoms are subsiding without treatment.

The next two cases were relieved—one cured in fact, and the other so much relieved that I am convinced a cure followed. I was likewise unable to ascertain the ultimate results, on account of wrong addresses.

CASE IX.—*Three years' standing; cure not fully established.* J. T., laboring man, aged forty years, had a strong current applied December 6, 1877, for the first time. The sciatica, left side, was of three years' standing, and the usual history was obtained. Relief followed the application.

8th. On the 6th was free from pain all day, but on the 7th had a light paroxysm on getting out of bed, and another at 4 P. M. Slept well both nights—a new experience for him. A strong current is repeated this morning.

10th. Reports himself as perfectly well. On rising from bed had a very light attack of pain, but had none yesterday.

12th. No pain on 10th, but on 11th had a severe paroxysm lasting about ten minutes, and this morning on rising had an ache or two, which soon passed off. Did much walking yesterday and this morning. Current still employed.

14th. More pain yesterday than usual; the weather inclement and changeable. Feels, however, much better than he did before the treatment was begun.

18th. Has suffered during the past few days at irregular intervals, though he has been quite actively engaged at manual labor. A mild current is used to-day.

20th. Has had only one attack of pain since last note, and this was about the knees and ankle. A current of medium strength this morning.

24th. Had a sharp attack yesterday at 7 P. M., but none since. Repeat the medium current.

31st. Complains of a little pain at knee, but none elsewhere.

The patient did not return again, and as he lived in Brooklyn, and had moved since the date of my last note, I did not succeed in tracing up the case. The sittings were too short, and to this I feel sure we can attribute our failure to achieve a perfect success.

NEW YORK CITY. (To be continued.)

SIX CASES OF DYSPAREUNIA.

BY A. F. KINNE, M. D.

I report the following cases, as instances of some of the various lesions which may occasion the above serious and sometimes distressing abnormality:

CASE I. I was called in July, 1858, by her husband, to see Mrs. E. K., aged thirty-six, and the mother of four children, on account of "a something growing" in the vaginal passage, which had come at length to interrupt sexual intercourse, and which they feared would prove to be of a malignant character. Upon exposing the parts I found, just within the passage, an encysted tumor, of the size of a large hickory-nut, in the recto-vaginal septum. It was evident that it could not be removed without producing a recto-vaginal fistula, for the sack, upon the vaginal side at least, had coalesced with the mucous membrane, and the tumor was becoming an abscess, except that its contents were not purulent. I therefore laid it well open, and after evacuating the contents rubbed the inner surface freely with lunar caustic. The cure was complete.

CASES II and III. In the winter of 1872, Mr. C. came to my office for advice in behalf of his second wife, whom he had recently married and with whom he had found it impossible to have sexual relations. Upon a careful examination of this case, under chloroform, no cause for the dyspareunia could be discovered. It seemed to be purely a neurosis; and relief was obtained by inserting the thumbs, back to back, and making forcible dilatation. I might have tried iodoform, or some other local application, in this case, but chloroform being necessary for a thorough physical examination of the case, the course which I took was probably the best.

The experience of this gentleman in his marital relations would seem to have been exceptionally trying. He stated that he had lived nine years with a former wife without ever having accomplished the sexual act. And it would seem that

a sensitive caruncle must have existed in the case of this wife, for at times she complained of great pain in urination and so forth. But the most remarkable point in this case was, that he had consulted a number of physicians, at different times during this long period, without obtaining any relief or satisfaction—a state of things which will be found to exist, I think, in connection with a very great proportion of these cases. Indeed, but for this circumstance I should hardly deem my own experience worth reporting. Vaginismus and dyspareunia are comparatively recent terms, and the time is within the memory of many of us, when nothing used to be said about the condition which they describe.

Case IV. In February, 1875, I got a patient out of the hands of a "cancer doctor," by showing her that her cancer was an irritable caruncle of the meatus urinarius; that it could be instantly killed and got rid of, without blood and without any considerable pain, by the actual cautery; and by explaining, a little in detail, that the parts around would be protected by a bit of wood, with a hole through it, of the shape and size of the tubercle; and that the morbid growth, though exquisitely painful to the touch of a feather even, would not be so to the cautery, for the reason that the iron, at a white heat, would instantly paralyze and kill the nerve proliferations, of which these growths are largely composed.* This patient, Mrs. W. W., twenty-three years old, had been married three years, but without sexual congress; began to suffer pain upon urinating soon after puberty; and during the ensuing years had consulted a number of physicians without relief and without having the real nature of her case explained. A single application of the cautery, as above indicated, produced satisfactory results.

Case V. Mrs. F. Y., sixty-three years old and the mother of a family of adult children, sent for me in August, 1875. For a number of years she had felt an increasing pain upon micturition, which of late had become unendurable. She suf-

* Dr. John Reid, quoted in Barnes on Women, p. 766.

fered some also when either walking or sitting, and from such examination as she herself could make feared that something was growing there. And her son, a friend of mine and a graduate of the Medical Department of Michigan University, without having made a physical examination, and without expressing an opinion, had advised her to give the case to me. For obvious reasons nothing was said of dyspareunia in this case; but upon exposing the parts, a caruncle was to be seen bulging from the meatus of the most sensitive kind. The first application of the heated iron in this case was partially a failure, and after two or three weeks the operation was repeated. The cauterizing bulb was "olive-shaped" as directed, when I think it should have been of *the size and shape* of the morbid growth to be touched.

Case VI. On February 9, 1878, I was called by Mr. C. S. to see his wife, some twenty years of age and apparently in good health, who was about to miscarry in the fifth month. On the way, he remarked anxiously that he could not see how the case could be got along with, for the family physician, whose attendance could not just then be procured, had ascertained that there was almost no vaginal passage at all, and that for a number of weeks he had been trying to enlarge it by the frequent introduction of glass dilators.

"If there is no passage there," I remarked, "then I would like to inquire how it comes about that your wife is in the family way?" "If you can not answer that yourself," he replied, "I do not know who can. All I can say is that there is no passage there that I could ever find, and we have never had sexual connection at all."

Suspecting, however, that it after all might be a case of dyspareunia, I first gave chloroform, and then proceeded to make an examination. I found no difficulty in doing this; the parts were natural; there was no stenosis, and none had ever existed. In about half an hour I had the pleasure of astonishing these worthy people by presenting them the fetus, with the investing membranes still unbroken—the "human egg" entire.

Upon questioning this woman, "separate and apart from her husband," she confirmed his statement in every particular. She showed me the last and largest dilator that the doctor had introduced; it was an ordinary small-sized test-tube, some two inches long and three-eighths of an inch in diameter; and with every appearance of truthfulness she declared that these tubes were the only thing that had ever found entrance into the vagina.

Here then was an aggravated case of dyspareunia, for which at the time I could discover no cause; and as no thorough examination has ever been called for, I am led to conclude that it was a neurosis, and that the miscarriage has operated as a sufficient cure for it. At a subsequent interview, the husband admitted that there had been "fooling" between them; and to this kind of performance, whatever it may be, the origin of the pregnancy will have to be traced.

I made a verbal report of the fifth case before the Washtenow County Medical Society, and the discussion which followed disclosed the existence, among distinguished men, of a difference of opinion as to the treatment most appropriate for some of these cases. Dr. Dunster seemed to favor transfixing the base of the tumor with a tenaculum, and then cutting away both together; and, in support of this view, referred to the practice of the New York Hospitals; while the late Dr. Sager thought the weight of authority was in favor of the cautery, actual or galvanic, and especially as in many cases, if not in most, some form of cautery must follow the scissors for the purpose of arresting the hemorrhage. And I can not resist the impression that there may be an unfounded presumption at the bottom of this (one in which the patient, unless she is instructed beforehand, is likely to have a lively share), to-wit, that to a part so extremely sensitive as most of these growths are, the cautery must be much more painful than it is when applied elsewhere—to the stump, for instance, after the caruncle is removed,—while the truth, as above stated, is exactly the reverse of this.

YPSILANTI, MICH.

FOREIGN CORRESPONDENCE—OUR LONDON LETTER.

LONDON, February 10, 1879.

MY DEAR YANDELL: We have just passed through what is called a good old-fashioned winter, and most of us are amply satisfied, and quite content to have modern winters for the rest of our natural lifetime. What betwixt the villainous weather rendering traveling very disagreeable, the tightness of money, the paralysis of trade, chiefly due to an imbecile government, and a general state of all being wrong "somehow," the consultants of London are at low water for fees. Each man looks the other in the face with a doubtful expression, and asks "How's practice?" I have not found the man lately who has ventured a cheerful response to that pertinent question. We are too doleful to think the question any longer *im*-pertinent, and are trusting that the patients will turn out again when the weather improves. It is quite encouraging to see such confiding trust in providence on the part of a profession usually charged with a lack of faith.

The most interesting medical matter which has been discussed of late has been the subject of Epilepsy, the diagnosis of which formed the subject-matter of the Harveian Lectures delivered by Dr. Hughlings Jackson. As may be supposed these lectures were well attended, and the lecturer handled the matter with his wonted clearness and lucidity. He commenced by pointing out that diseases are departures from healthy states, but for convenience we arrange and classify them according as they approach certain types. He said he should consider epilepsies on the hypothesis that the paroxysm of each is dependent on a sudden temporary discharge of some highly unstable region of the cerebral cortex. Epilepsy is then a "discharging lesion." The discharge from these highly unstable cells of the cortex cerebri is often very localized. Secondary discharges may be set up by the currents developed by the primitive discharge. The "discharging lesion" may be likened to a fulminate which overcomes

the resistance of less unstable compounds. He showed how much the researches of Ferrier and of Hitzig had added to our acquaintance with epilepsy, and how the discharges which were caused by the application of the faradic current to certain portions of the cortex cerebri caused muscular movements allied to epileptic convulsions. Epilepsy is often preceded by a crude sensation of taste, sight, hearing, smell, or of the ordinary sense. The extension of currents, and with it the amount of convulsion, depends upon the resistance each current has to overcome in the rest of the cerebral cortex. But patients do not come to us complaining of a "discharging lesion;" they come complaining that they have had "a bad fit," or that they "occasionally lose themselves for a moment." He proposed to regard the subject from its clinical rather than its scientific aspect. He would divide the subject into, first, epilepsy proper; and, second, epileptic seizures. In the first consciousness is lost at first, or very soon; in the latter, late on or not at all. The loss of consciousness is the measure of the blow received from the local discharge affecting the rest of the brain. In the first, convulsion is rapidly developed; in the latter, it begins very locally on one side and spreads gradually. In the last there is increased instability of cells, with occasional excessive liberations of energy. In the last, then, there is increased nutrition which leads to the discharge. How this increased nutrition is brought about we do not yet know; in some cases it is excited by a tumor. Epilepsy proper is rarely caused by gross organic disease; epileptic seizures are often so caused, and especially by syphilitic disease. Such seizures, without loss of consciousness, point to gross organic disease.

Taking epilepsy proper, we may say that it is a paroxysmal loss of consciousness, with more or less spasm of muscle. The amount of spasm may be very varied. In one case a man used to show his twitching hand to his fellow-workmen, "as a curiosity," before he had more severe seizures. The correspondence, however, is not betwixt the affection of consciousness and the peripheral effects of the discharge; there

may be a discharge strong enough to abolish consciousness, and yet not be strong enough to produce any, or very slight, peripheral effects. Sometimes the peripheral effect is confined to the facial muscles, and a vacant or startled look is the only outward visible sign of the epileptic attack. The subjective sensation may be only a giddiness or a reverie. Such are the characters of the *petit mal.* Such "little fits" may alternate, or be mixed up with more severe fits. There is then partial or complete loss of consciousness; the patient may be but imperfectly conscious, or, in his own language, "confused." The effect of the discharge may be to cause secretion, as a free flow of saliva; or it may affect the bladder, and the patient passes urine involuntarily. "During excessive discharges of the very highest centers, nothing like normal mental states arise: time is required for consciousness; consciousness ceases during the rapid and excessive discharges of vast numbers of the nervous arrangements, which are the substrata of consciousness. The psychical states arising during an epileptic discharge of the highest centers are only crude sensations, such as vertigo or epigastric sensation."

The peripheral effects of epileptic discharges may be roughly divided into three forms:—First, affection of parts serving in animal functions, as visible movements, crude sensations, as a "ball of fire," or a stench, or vertigo. Second, affection of parts serving in organic functions, as a flow of saliva, an intermitting pulse, or an eructation, or a sensation of dying, or nausea. Third, common to both animal and organic, as a suspension of respiration.

After this followed a consideration of the relation of consciousness to certain physical conditions of the greatest interest, but which can not possibly be abstracted. The gist of it is that the different parts of the body are represented in the "organ of mind"—the liver as much as the hand. Thus there is a visceral aura, as well as those starting from the thumb or toe. Not only so, but there are more permanent mental conditions in different diseases, as the *spes phthisica*, and the melancholia of abdominal disease. He goes on to

say:—"I doubt not that when there is a discharging lesion in a cerebral center, representing especially the stomach, when the patient at the outset of his seizure has a sensation of nausea, that center being in an unstable condition is easily worried into discharging when the digestion is overworked."

Involuntary discharges of urine or of feces, are exceedingly valuable helps to the diagnosis of epilepsy, especially in its slighter forms. If a child, and still more an adult, pass urine in bed, epilepsy should be carefully looked for. If passage of urine occur during a so-called "faint" or "giddy attack," in the daytime, epilepsy is almost certain. That the manifestations should be very slight, or at distant intervals, the person in the meantime appearing in first-rate health, does not militate against the diagnosis of epilepsy.

As to its pathology, comes the great question,—"Is the change primarily arterial, and secondarily nervous; or is it a change beginning, first of all, in the nerve cell? There are many nervous diseases which are not nervous at all, in the sense that the nervous elements are the first to go wrong. In most cases of nervous diseases of which there is an anatomy, the nervous elements are quite innocent; they suffer because their arteries are blocked up or break—because tumors grow in their connective tissue," etc.

The question of the hereditariness of epilepsy was next reviewed. That relatives have died of apoplexy from cerebral hemorrhage is simply no evidence of a patient's inheriting a disease of the nervous system. Neither does the fact that chorea, neuralgia, or even epilepsy proper, have occurred in the patient's family, make it possible to say that epilepsy is inherited, "or the tendency thereto, in the sense that they point to changes *beginning* in nervous elements. The occurrence of these neuroses can not be adduced as evidence that epilepsy is a disease primarily nervous."

In the third lecture, Dr. Jackson spoke of the mental condition during epilepsy. "There is a double mental state—a negative and a positive element together. A patient seized with a slight fit suddenly becomes vague as to his surround-

ings, and at the very same time, or in instant sequence, he has a 'dreamy' feeling, often of some apparently former surroundings. This double mental state helps the diagnosis of slight seizures greatly." With the "dreamy" state there may be action; there is "an epileptic somnambulism" as well as "an epileptic dream." An epileptic, after a slight fit, took his boots off in church; another began to undress on a wharf, and was stopped by his fellow-workmen when he had got off one leg of his trowsers. There may, however, be actions more elaborate. "The 'dreamy' state may be followed by actions; the patient remembers his dream, but knows nothing of his actions." The positive mental element may take the form of a reminiscence: one patient said, "It seems as if I went back to all that had occurred in my childhood, as if I see everything, but so quick and soon gone that I can not describe it." Where epilepsy originates in terror, in each succeeding fit the patient goes through again the painful circumstances or the frightful scenes which produced the first attack.

Then there are post-epileptic actions: The patient acts nearly normally. For example, a patient seized with a slight fit when about to wash himself, twirls his hands about the basin; or going up-stairs to make slight alterations in his dress, has a slight fit and undresses; or he walks quietly the wrong road, and finds himself in some strange place; or has a sort of coördinated convulsion, lies on the floor or sprawls about; or, if a woman, kicks about and shouts or laughs—a condition often taken for hysteria; or the patient is up and about, and violently maniacal.

The two following illustrations of post-epileptic conditions were not related by Dr. Jackson in his lectures, but he told them to me some little time ago; and as they are instructive, they may be related here. In one case a gentleman, going with his wife to visit a cathedral, had a slight fit, being subject to fits, and all the outward evidence of it was his remark, "How much shall we have to give the housekeeper?" The impression left on his mind after the fit was that the cathedral was a private mansion. The second may some day come to

have a distinct medico-legal value. A medical man, who was subject to the *petit mal*, was shown into a lady's room, whom he was attending professionally, she being in labor. He had a slight fit, after which he began undressing himself, under the impression that he was in a lady's bedroom for a totally different purpose.

One man was subject to slight as well as more severe fits. He becomes very violent sometimes—breaks articles of furniture, etc. "He remembers nothing of these actions. In or after one of his slighter attacks, he was supposed by the foreman to be intoxicated; and on another occasion was accused of stealing, because in his insensible state he took a fellow-workman's jacket."

He concludes:—"In no case can we suppose the 'dreamy state' to be a symptom of the same order as the crude sensation, which may go along with it; for the crude sensation attends the epileptic discharge, the dreamy state is infinitely too elaborate to have such causation. It is supposed to be owing to 'loss of control,' and possibly may depend on rise in activity of the opposite cerebral hemisphere."

Such, then, is the present and most advanced position of our knowledge of epilepsy and epileptic conditions. Let me add that Dr. Hughlings Jackson is in accord with Brown-Séquard that iron does not agree well with epileptics.

Obstruction of the bowels is a matter exciting much interest here at the present time. Dr. Clifford Allbutt writes:—"When a doctor is called to a case of obstruction of the bowels, he has at once to determine, if possible, the process, the site, and the nature of the block. As regards the process of it, he will try to decide whether the obstruction be due first to enteritis, plugging, intussusception, hernia or stricture. He may then decide where the disturbance lies, and finally of what nature it is. The enteritis may be primary, secondary, or tubercular, etc. Plugging may be fecal, polypoid, due to gall-stone, and so forth, and may be accompanied by enteritis. Intussusception may be strangulated, or simply incarcerated; and is probably always accompanied by inflammation, simple

purulent or gangrenous. Hernia may be in the usual internal or external sites; or may be due to other accidental twisting or snaring of the bowel, and is sure to be accompanied by some degree of inflammation. Finally, stricture may be simple, malignant, or due to pressure from without; and is less frequently accompanied by inflammation than the preceding events. In dealing with obstruction the lesson I am never tired of enforcing in all cases is, that the therapeutics depend upon the diagnosis. Make diagnosis accurate and complete, and treatment will come of itself. Never mind the name of the disease, but make out precisely what state of things is before you in the individual case, and you will rarely be at a loss for treatment," is his advice to students.

Dr. Allbutt then proceeded to draw a parallel betwixt the careful treatment of hernia and the reckless manner in which purgatives are given in many cases of internal obstruction. "Is it not," he says, "our business to soothe with fomentations and the like; and, above all, to put the patient fully under opiates?" As to the treatment of internal obstructions, he says:—"To whip a dog in a leash is to strangle him; he may slip his collar if he be left to himself. It is not by agonized writhings that the bowel will get loose, but by quiet subsidence if at all. But if those means fail the abdomen must be opened, as it must be in strangulated hernia; in the latter case, operation gives the patient his only chance."

Mr. Pridgen Teale then follows with an account of "Exploration of the Abdomen in Obstruction of the Bowel." He regards this as justifiable on "two cardinal grounds—first, the mere opening of the peritoneal cavity is not necessarily a dangerous operation; second, there are many cases of obstruction of the bowels which must prove fatal unless relief can be given, which can only be rightly directed by means of exploration of the abdominal cavity."

His conclusions on one illustrative case are as follows:

"1. The opening of the abdominal cavity did not shorten life, but actually prolonged it. 2. Could the operation have

been done twelve hours earlier, the probability is that the bowel would have recovered, and that the patient might have lived. 3. The operation did not cause peritonitis. 4. When we open the body for obstruction of the bowel, even if the condition causing it be enteritis or peritonitis, we may attain the greatest amount of benefit if we boldly aim at emptying the bowels, as far as possible, of flatus and fluid, by effectual openings—*i. e.*, with the scalpel—so as to replace the bowels *perfectly flaccid and free from gas or tension.* 5. If the bowels be mechanically emptied of gas and rendered flaccid, the gas is not reformed rapidly, and meantime the circulation in the bowels, being relieved from pressure, has time to recover itself." Mr. Teale is a very cautious surgeon, and is not given to rash procedure.

Apropos of opening the abdominal cavity, let me tell a story which is now in circulation here. A lady went to a celebrated ovariotomist, who successfully operated upon her, removing an ovarian tumor. Four or five weeks later the lady went to an equally celebrated lithotomist, with symptoms of stone in the bladder: the sound detected a hard substance. The lady preferred being operated on again by the ovariotomist. The solid body was removed from the bladder. The ovariotomist took it to the lithotomist, saying, "It is not a stone!" "Then it is a surgical instrument!" was the confident reply. It was *a pair of forceps.* Unfortunately the lady did not survive the second operation. More may be heard of this case, as the lady promised her doctor, who took her to the ovariotomist in the first place, that if she survived the operation she would marry him. The lady was rich, and her disappointed suitor is threatening legal vengeance, in the shape of damages.

J. M. F.

Reviews.

The Principles and Practice of Surgery—Being a Treatise on Surgical Diseases and Injuries. By D. HAYES AGNEW, M. D., LL. D., Professor of Surgery in the Medical Department of the University of Pennsylvania. Profusely illustrated. In two volumes. Volume I. Philadelphia: J. B. Lippincott and Co. London: 16 Southampton Street, Covent Garden. 1878.

This is the most ambitious surgery which has been put forth in this country by an American author. The present volume, which is its first part only, contains 1060 pages of royal octavo, closely printed. The subjects treated are Surgical Diagnosis, Inflammation, Injuries of the Head, Injuries of the Chest and Abdomen, Wounds of the Extremities, Diseases of the Abdomen, Diseases and Injuries of the Blood Vessels, Ligation of Arteries, Surgical Dressings, and Diseases and Injuries of the Osseous System. Should the remaining chapters be cast in the gigantic scale adopted for some of these already given, it is not probable that a second volume will encompass them. In these modern days of specialties, such an undertaking as this work of Professor Agnew's is somewhat unique. When so much is to be embraced, not cursorily in the form of the text-book, but critically and exhaustively, the tendency has been to a division of labor, and the committal of the work to experts in the several fields. In such manner have the various encyclopedias, dictionaries, and systems been born. But we do not think it by any means proven, by the quality of much of the work which has been thus accomplished, that it is the only method of reaching perfection. Holmes's System is a most unequal compound of emanations from masters and men, and certainly not a more creditable picture of British surgery than that presented by Erichsen, who borrows but a

single chapter from Streatfield; and the immense satisfaction which the cyclopedic volumes of Professor Gross continue to give, is evidence that one great mind may still control the literature of surgery.

Upon the subjects treated in the volume before us, Professor Agnew certainly had no need for aid. And we feel quite certain, in those to be presented hereafter, that what with personal experience and native talent to appreciate the work of others, he will, should he live to finish his volumes, give to the world a surgery of great value. Indeed Professor Agnew is one of the very few men from whom we think another surgery should have been demanded in these days of facile book-making. We might have been sure beforehand that what he had to say was worthy of record. His experience is ripe, and his industry as a student, teacher and practitioner has been marvellous. Added to these the directness of his mental vision has given him exceedingly plain views of truth, and the conscientiousness of his nature has made his testimony exact. Certainly the first impressions one gets from perusal of the pages we have under review is the honesty with which the subjects they contain are set forth, and the practical value of the knowledge they contain. Prof. Agnew's style is always clear; he is never affected: only now and then, at long intervals, he indulges in illustrations which might be considered strained. He is always interesting.

The introductory chapter on surgical diagnosis is particularly well considered. It might have been interpolated anywhere, and perhaps occupies this leading position from the rank which Prof. Agnew gives to diagnosis. The following extract will denote the author's wisdom and care:

"A third class of cases will be encountered, so obscure and unpronounced as to baffle the keenest analysis. Whenever, therefore, the surgeon is compelled to proceed on a data of probabilities, it is in most instances a good rule to *wait*. Often in my professional life, when in a maze of doubt and uncertainty, have I imitated with the happiest results the storm-beset mariner, who, in the darkness of the night and nearing an unknown coast, casts anchor and waits for the day. A few hours even of delay may open a crevice in a hitherto hidden case of

disease, which will be sufficient to illuminate its obscurity and resolve all uncertainties."

The chapter on inflammation is full, containing one hundred and twenty pages. The history of the advance made in our knowledge of the process is remarkably well done, as indeed are all the historical and statistical accounts of the work. The pathological accounts are well up to, but do not in any particular surpass their models. In the treatment of special forms, Martin's elastic bandage might have been included among the more worthy methods of combating ulcers.

The chapter on wounds contains one hundred pages. The author gives decided preference to catgut ligatures when they have been properly prepared, say by ninety days' soaking in oil, and is a convert to the antiseptic method. While he has not obtained results so decided as those of Professor Lister, his "success has been so much more satisfactory than that obtained by the ordinary plans, that to decline the use of antiseptic dressings would be to withhold from the patient the benefit of one of the most important resources of the art." In the original lectures of Mr. Chiene, the first of which appears in the current number of the American Practitioner, the subject of antiseptics will have ample consideration.

The all-important subject of "shock" has only been incidentally alluded to. Injuries of the head occupy seventy-five pages, and comprise wounds of the face and neck also. The discussion of brain injuries is not so extensive, or indeed so satisfactory as we might have expected, though convenient rules, which embrace we think safe practice, have been presented. Mr. Erichsen's treatment of the subject, especially in his detached lectures, is much more philosophic and should have been drawn upon more largely.

Injuries of the chest and abdomen, especially the former, have received a fair share of consideration, and the lessons of the civil war have been well embodied. The chapter on wounds of the extremities is not worthy of its companionship. Certainly in a work where space seems to be no particular ob-

ject, five pages was not enough to devote to accidents which call for so much of the surgeon's work.

Diseases of the abdomen occupy one hundred and twenty pages. Rectal diseases and the hernias are included. Laparotomy in intestinal obstruction is advised after fruitlessly "persevering for several days in the use of the usual remedies." We should have liked to have seen our author take stand for earlier operative interference in this class of cases. Colotomy in malignant stricture is urged. The consideration of hernia is, we submit, not up to the author's mark, either in pathology or treatment. In the taxis, valuable auxiliaries are either not emphasized or are wholly omitted.

Chapter IX is on surgical dressings, and appears in this situation without any reference, that we can discover, to order; nor are we much pleased with it. Possibly our prejudices against the ever-recurring plates which seem destined to appear in every Philadelphia work on dressings, is such that we may be unfair in our judgment; but we are greatly mistaken if several of the bandages figured could be applied as depicted or described. Of most of the other illustrations which are given in such profusion throughout the work, we can not withhold our praise. They are simply admirable.

Chapter VIII is on diseases and injuries of the blood vessels. It contains one hundred and twelve pages, and is followed by one of sixty pages on the ligation of the vessels. The consideration of aneurism is one of the strongest features in Professor Agnew's work; and no where has there been given a better account of ligation than in his chapter upon the subject.

The concluding chapter of the book is that on which Professor Agnew has seemingly, we should say, exhibited his best quality. It is on "Injuries and Diseases of the Osseous System," and contains three hundred and twenty-five pages, nearly three hundred of which are taken up with the consideration of fractures. The tables of ununited fractures, compiled for the author by Dr. F. Muhlenburg, occupy fifty pages

of the text, and embrace six hundred and eighty cases, illustrating every treatment. The tables of fractures treated in the Pennsylvania Hospital, from 1850 to 1874, are also introduced. These tables are apt to strike one as rather too much of a good thing in a work of this character, but they certainly render the book indispensable for reference when the subject-matter of fractures is to be thoroughly considered. Nothing novel in the treatment of fracture is introduced. All the old machinery, however, is carefully preserved and presented. This was to be expected, however, as the author is not an advocate for the immediate application of the plaster-of-paris apparatus—waits as usual "for swelling to subside" in fractures of the leg, and would not recommend its use at all in fractures of the thigh. When the plaster apparatus is used, as it is in the North, upon the idea that it keeps up forced extension, and must therefore grasp the parts, we can enter even more heartily than does Professor Agnew in any doubt or condemnation that may be placed upon it. When put on after the manner of Erichsen, as it is in the latter-day surgery of Kentucky and the South—over an ample layer of cotton batting—we consider its immediate application called for in every fracture of the lower extremity which does not demand amputation, whatever its situation; and we think the dressing thus applied is all that can be wished for in the treatment of the injuries named. Why, therefore, "long splints" and the scores of apparatus from the fathers should cumber the earth, we can no more imagine than why the stage-coach of the past should take the place of the railways and locomotives of the present.

But no details that we could compress in the space at our disposal would do justice to Professor Agnew's volume. Its hearty reception by the profession is a foregone conclusion. So interesting and instructive a work, such a useful help and so safe a guide, can not but meet with the warmest of welcomes, and wear through a long companionship. Certainly our best wishes and recommendations follow it.

Physiology—Preliminary Course of Lectures. By JAMES T. WHITAKER, M. A., M. D., Professor of Physiology and Clinical Medicine in the Medical College of Ohio; Lecturer on Clinical Medicine at the Good Samaritan Hospital; Member of the Cincinnati Academy of Medicine, and the Cincinnati Society of Natural History.

On the Influence of Physiology upon Practice; On the Conservation of Force; On the Origin of Life, and the Evolution of its Forms; and on Protoplasm, Bone, Muscle, Nerve and Blood. Illustrated. Cincinnati: Chancy R. Murray. 1879.

This is a long title and indicative; sets out the general subject, then names the particular theme of each of the twelve lectures. All the lectures treat of affairs of science valuable to the physician as knowledge, and some of them deal with subjects to understand which is an indispensable requirement of a competent practitioner of medicine.

The first lecture is an agreeable running commentary on ancient physiology, with its imperfections and superstitions, and how it gradually developed into the present status of the science, with pen pictures of some prominent physiologists of the past and their associations and surroundings. The next four lectures are a kind of *index rerum* in the nebular theory of the solar system, the doctrine of evolution, the descent of man, the origin of species, the survival of the fittest, and natural, artificial and sexual selection, with well digested notices of some of the eminent men and their measures prominently associated with the development of these scientific problems.

Chapter VI, under the caption "protoplasm and its properties," begins the discussion of subjects more frequently treated of as a necessary part of human physiology; and chapter VII continues the same subject, and the history of the cell doctrine and structure and chemistry of cells, is concisely but plainly and satisfactorily given. "Bone and its properties" has consideration in chapter VIII, and "muscle and its properties" is presented in the next two chapters. Chapter XI is devoted to "nerve and its properties;" and the book concludes with chapter XII, on "blood and its properties."

These lectures constitute the preliminary course in the Medi-

cal College of Ohio, and the preface announces that they are fashioned to fit the comprehension of first course students. From another source one learns that the preliminary course in this college is delivered in September, and attendance on it is earnestly recommended to all students, but is not obligatory on any. If the substance of these lectures is omitted from the regular course, all students who fail to attend in September must have quite a hiatus in their physiological instruction. One can be but apprehensive that not all first course students have had the necessary preceding education to ingest and assimilate the rich mental food tendered them by Dr. Whitaker in these lectures. Indeed, unless last course students are more learned than their predecessors of a few years back, under similar circumstances, it is quite certain that many a young graduate will proudly bear his diploma, and still not have a moiety of the physiological lore implied in these lectures, to say nothing of their cosmogonal teachings; *albeit*, there is not therein a point stated nor hinted, but that should be fully commanded by every disciple of Esculapius before he is admitted to the ranks of the active practicing profession.

Human physiology is the normal activity of the human frame; pathology is the abnormal activity of the same. It would seem but the reasonable duty of every doctor to understand its physiology before he undertakes to correct its pathology; and yet how often do we find the professional neophyte struggling to hold in his memory formulas in medicine and proceedings in surgery, to the exclusion of the physiological rationale that underlies both.

All well wishers of doctors and their clients owe Dr. Whitaker thanks for the elevated ideas of physiology and its mission inculcated in these lectures; for although he presents them as only the introduction to the great science, still we can feel assured that when an architect fashions and finishes a portal in beauty and appropriateness, the temple to which it leads has been conceived and constructed in harmonious and symmetrical grandeur. J. F. H.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. Von Ziemssen. Vol. XV. Diseases of the Kidney. 8vo., 796 pp. New York: William Wood and Co.

Few medical publications in modern times have evoked such conflicting criticism as Ziemssen's Cyclopædia. The magnitude of the enterprise, the great number of contributors, the bulk of the work, forming quite a library in itself, and finally its costliness, are elements which have all been dwelt upon by different critics. The advisability of publishing cyclopedic work (at such high figure) of a science so rapidly progressing as medicine, is a question each student must settle for himself. It can be said with truth that in this work the English and American reader will find an immense storehouse of learning, which without it would have been inacessible to him. The experience and views of the leading German writers are here laid before him; and whether his own opinions correspond with theirs or not, he becomes enriched by their experience, and, as a well informed physician, he ought to be familiar with their views. To the scholarly and studious physician, Ziemssen's Cyclopædia is invaluable. To that professional fraud, "the busy practitioner," it is useless; the latter never reads anything of heavier caliber than Braithwaite's Retrospect, eschews all articles longer than half a page, detests pathology, and *studies* not at all. "The busy practitioner" never will spend money on mere books; when he wants to see what "the books" say, he usually borrows them from his more studious neighbors, and sometimes is "too busy" to return them.

The present volume (No. XV), is the joint product of Professors Bartels of Kiel and Ebstein of Göttingen. The name of the former is not unknown to readers of German medical literature; nor is this his first contribution to renal pathology.

The work is divided into two parts—the Structural Diseases of the Kidney, and General Symptoms of Renal Affections. Of this part Professor Bartels is the author: it includes acute parenchymatous nephritis, chronic parenchymatous nephritis,

renal cirrhosis, amyloid degeneration, etc. It is a thorough and comprehensive exposé of the present knowledge of renal pathology and therapeutics; but it is surprising that no mention is made of the use of jaborandi in the treatment of various forms of renal disease. This remedy is now so firmly established in the confidence of the profession, that it must be considered a great oversight in both author and editor to omit any notice of it.

The second part is by Prof. Ebstein, and includes tumors, certain forms of degeneration, and diseases of the pelves of the kidney and of the ureters, parasites and anomalies in the form, position and number of the kidneys. The chapters on hydronephrosis and on cystic degeneration of the kidneys, are remarkable for their brevity and incompleteness; the author is apparently not aware of all that has recently been published on these subjects, both as to clinical history and pathology. The second part of the work is not equal to the first, although it must be considered quite valuable.

The translators deserve great praise for the manner in which they have executed so laborious and difficult a task. Translations of foreign works into our language are numerous enough, but it is as pleasant as it is rare to find an accurate reproduction of the author's ideas expressed in idiomatic and even moderately elegant English. The translators of Ziemssen's Cyclopædia have committed a smaller number of those sins so common to their craft, that they have earned the thanks of much abused and long suffering readers. J. A. O.

Health Primers—

1. Exercise and Training. By C. H. RALFE, M. D.
2. Alcohol—Its Use and Abuse. By W. S. GREENFIELD, M. D.
3. The House and its Surroundings. Author not named.
4. Premature Death—Its Prevention or Promotion. Author not named.

New York: D. Appleton and Co. 96 pages in each.

These little books are not written for doctors, although they are written by doctors chiefly, and most doctors may

read them with profit. The preface to the American edition has this declaration:—"Though it is of the greatest importance that books upon health should be in the highest degree trustworthy, it is notorious that most of the cheap and popular kind are the mere crude compilations of incompetent persons, and are often misleading and injurious. Impressed by these considerations, several eminent medical and scientific men of London have combined to prepare a series of Health Primers, of a character that shall be entitled to the fullest public confidence. They are to be brief, simple, and elementary in statement, and they will be filled with substantial and useful information, suitable for grown-up people. Each primer will be written by a gentleman specially competent to treat his subject; while the choice of topics and the critical supervision of the books will be in the hands of an able and reponsible committee."

To this may be added that the four numbers of the series under notice fully carry out the promise of the preface; even the use and abuse of alcohol is so fairly and so clearly presented, that we may reasonably hope that all minds not clouded by stimulants nor warped by fanaticism will find it placing alcohol in its true position among foods and medicaments. This is doing a good and a wanted work. The other primers are as well written as the one treating of alcohol, and the author of each has put the substance of volumes in these few pages in such manner that it shall be available for the practical every-day use of grown-up intelligent persons.

A list of names of contributors and of the editors is printed in each volume; and they are the names of skilled and eminent men—a guarantee that the whole series of Health Primers will maintain the promise of the initial four numbers. Doctors can do a valuable service by procuring these primers and using their contents as texts for lay sermons to a needy constituency.

J. F. H.

Clinic of the Month.

TREATMENT OF ASTHMA.—Dr. J. C. Thorowgood, Lancet, February 15, writes thus:

Among remedial agents employed during a bad paroxysm of asthma, few are more universally known and employed than the smoke of burning nitre-paper. Ordinary blotting-paper is soaked in a strong solution of nitrate of potash, and, when dry, is burnt till the patient's room is filled with a cloud of nitrous fume, and often it is not till the room is thus filled with smoke that the sufferer finds relief. As long ago as 1846 we find this use of nitre-paper highly extolled in the Medical Gazette; and in the Lancet, April 5, 1845, we learn how a friend of Mr. Harrison's tried burning paper that had been soaked in saturated solution of nitrate of potash, and felt the inhaled smoke to clear the passages and open the air-tubes, and so conduce to free and easy respiration. Though some amount of emphysema and bronchitis does not invalidate the action of the nitrous fume, yet it is in the spasmodic sudden attacks of breath stoppage where its curative action is most marked. The chemical constituents of the fume have been examined by M. Vohl, and he found the nitrous vapor to contain cyanogen, carbonic acid, nitrogen, ammonia, and nitrite of potash. To the ammonia and nitrite of potash the anti-spasmodic property of the fume is attributed. Noticing that the constituents of the nitrous vapor are closely allied to some of the adventitious matters found in the close air of towns, I went over Salter's table of two hundred and twenty-three asthmatics to see if I could discover that those persons who are set down in the table as being notably relieved by the inhalation of the nitrous vapor were identical with those to whom town air proved so beneficial. I found that of twenty-

one who are said to have been greatly benefited by the air of London, there were nine to whom the nitre-paper was of marked service. Two, who are reported as cured by the London air, found nitre-paper inhalations more serviceable than anything else. One patient, whose sufferings were intensified in London, reports that nitre-paper seemed to do harm rather than good. Probably it is to the ammonia and carbonic acid gas that we may attribute the antispasmodic action of the burning paper. It has been shown by Trousseau how useful the inhalation of diluted ammonia can be in asthma, and Salter records a case where asthmatic spasm was at once stopped by breathing the vapor of diluted ammonia. The fact that the emanation from certain gas products is reputed good against the convulsion of hooping-cough, and that an asthmatical sea-captain could always breathe with facility when conveying a cargo of guano, are additional proofs of the antispasmodic action of ammoniacal vapor.

Among internal medicines that are good against spasmodic asthma, even when some degree of chronic bronchitis coëxists, a high place should be given to the arseniate of soda. In a commencing dose of one-twentieth of a grain, either in pill or solution, this salt has a great power of promoting respiratory action, and appears, moreover, to act as a tonic to the system, for I have noticed patients to gain appetite and weight during its administration. The Bourboule water, so beneficial as a drink for those subject to asthma, apparently owes its efficacy to a trace of arseniate of soda in its composition. Arsenic smoking, by means of cigarettes containing from a quarter to half a grain of arseniate, is very comforting to those who suffer from hay asthma, or from ordinary spasmodic asthma, provided no feverishness of system or inflammatory action be going on. Dr. Wilks told me some time ago of a former patient of his at Guy's Hospital, who, in his trade as a bird-stuffer, used much white arsenic. This man was asthmatical and a smoker, and, when taken with one of his breath attacks, he usually added some of his white arsenic to the contents of his pipe, and speedily found relief.

Lately the iodide of ethyl has been employed as an inhalation in the treatment of asthma. Pure iodide of ethyl is colorless, but, after a while, it is apt to acquire a brown tinge, if exposed to the light, from the liberation of free iodine. Dr. Andrew and I have used this preparation in a few cases in the Victoria Park Hospital, and with beneficial results. In one case under my care a young woman had an asthmatic seizure every morning at four o'clock of some severity, but was eased much by the use of strong coffee. We gave her for a week ten drops of the iodide of ethyl on lint three times a day for inhalation, and at the end of a week she had lost her cough as well as her asthmatic attacks, nor did they show any sign of returning during the remaining three weeks of her stay in the hospital. My clinical assistant, Mr. McDonald, was able to detect iodine by the starch test in the urine and expectoration of those who were inhaling the iodide of ethyl. In two cases recently I have observed excellent effects follow on the employment of the citrate of caffeine. One patient was an eminent medical practitioner in a large town in the north. He had suffered severely from paroxysmal asthma, and the utter failure of a list of approved inhalations and medicines (far too long to be here enumerated) was most distressing. Four grains of citrate of caffeine produced an undue degree of wakefulness, but one grain, taken regularly at bedtime, had a most happy effect indeed. So far as we can at present judge, it appears to have been really curative of the asthma. The last report says—"*Pari passu* with the asthma my cough and expectoration have gone, and I now have next to none of either." In another case, a highly informed and observant patient of Dr. Kingsford's, who had found much benefit from the inhalation of iodide of ethyl for an asthma and bronchitis of twenty years' standing, tried the citrate of caffeine in two grain doses, every afternoon for a fortnight, without any marked result. One day, however, being sadly worn out by a protracted attack of bronchial spasm which had lasted for eight hours, this patient took four grains of citrate of caffeine in coffee, with the effect of obtaining immediate

relief to the spasm, followed by three hours' quiet sleep in his chair. The citrate of caffeine appears to allay the abnormal excitability of the nerve-centers, and then repose ensues as a natural result.

Salicylate of Soda in Rheumatism.—The following are the conclusions by Marrot—*Archives Générales de Médecine*, February—as to the action of salicylate of soda in rheumatism:

1. During the course of acute articular rheumatism, there is a notable diminution in the quantity of urine, the proportion of uric acid increasing, and this increase is not explained by the lessened urine,—it is an absolute increase.

2. In cases of acute articular rheumatism left without treatment, the cure is characterized by a notable increase, during some days, of the quantity of urine, and by the return of uric acid and of the urea to the normal proportion.

3. Salicylate of soda given early in acute articular rheumatism, in some way hastens this natural crisis. One or two days after its administration, the urine becomes very abundant, clear and of slight density. There is a relative polyuria; the quantity of uric acid and of urea is much lessened. It is an interesting fact that these modifications of the urine occur independently of any change in the temperature.

4. In the cases of chronic articular rheumatism, the quantity of uric acid and of urea is rather diminished. Here the salicylate of soda has no useful result. If a patient with chronic rheumatism be subjected to hot baths, the quantity of uric acid contained in the urine is notably increased. Hence, as Professor Lasègue has shown, such baths are exceedingly useful in chronic rheumatism.

5. The salicylate of soda, as well as the hot bath, does not increase the *aglobulie* peculiar to chronic and acute articular rheumatism.

6. During the course of either acute or chronic articular rheumatism, the quantity of phosphoric acid is lessened, and so remains whatever treatment may be employed.

Notes and Queries.

CONVENTION OF AMERICAN MEDICAL COLLEGES.—At a meeting of the American Medical College Association, held in Buffalo, New York, June, 1878, Prof. S. D. Gross, a delegate from Jefferson Medical College, of Philadelphia, offered the following preamble and resolutions:

WHEREAS, It is eminently desirable that the medical schools of this country should adopt a uniform system of instruction of a grade fully in accord with the requirements of the age in other branches of study, and with the practice of the medical institutions of Europe; and,

WHEREAS, All the efforts to bring about such a change on the part of the American Medical Association, of the Association of Medical Teachers assembled at Cincinnati in 1867, and at Washington in 1869, and of different State medical societies, have signally failed; and,

WHEREAS, The present time seems to be peculiarly favorable for taking strong ground upon the subject, inasmuch as it is now attracting general attention throughout the United States; therefore,

Resolved, That this Association respectfully and earnestly request that the regularly organized and accredited medical schools of the United States hold at their earliest convenience a meeting for the purpose of adopting some definite and final action upon a subject of such vital importance to the dignity, character and usefulness of the profession and the welfare of the American people.

Resolved, That in order to impart proper efficiency to this plan each and every college be requested to send two delegates, consisting of one member of each Board of Trustees, and of one member of each Faculty, with full power to act for their respective institutions.

Resolved, That the medical and secular press throughout the United States be respectfully requested to lend their aid in the dissemination and discussion of these preambles and resolutions in order to place the whole matter of medical education prominently before the profession and the people.

Resolved, That a copy of these preambles and resolutions, signed by the President and Secretary of this Association, be transmitted to the

officers of every regularly constituted medical college in the United States, with a request to hold the contemplated meeting at Washington City, or at some other central point, on the first Wednesday in September next, or as soon thereafter as possible.

Prof. N. S. Davis seconded these preambles and resolutions, and heartily indorsed them.

Prof. T. G. Richardson moved that the time of the proposed meeting be fixed at the Friday preceding the meeting of the American Medical Association, and that the place be designated by the President of this Association. This amendment was adopted, and the preambles and resolutions as amended were adopted.

In compliance with this action of the American Medical College Association, its Acting President, Prof. N. S. Davis, of Chicago, has designated *Atlanta, Georgia*, as the *place* of the proposed convention, while the afore-mentioned action of the Association has fixed the *time* at 10 A. M. Friday, May 2, 1879. It is earnestly hoped that delegates from all "regularly organized and accredited medical schools" in the United States will promptly meet at the above designated time and place. That the action of the convention may be definite, it is desired that each college send two delegates, with full power to act for their respective institutions—one of these delegates to be selected from the Board of Trustees and one from the Faculty.

In general terms, the *object* of the convention is to adopt some "uniform system of instruction more in harmony with the requirements of the age." Among the questions appropriate for discussion and decision may be mentioned, "Shall all the colleges require attendance upon three regular courses of lectures during three separate years ere admitting students to become candidates for the degree of M. D.? Is any uniform system possible in this or other things? If so, to what extent is it possible or even desirable at the present time?"

Each doctor in the land doubtless has in mind an ideal medical college system. But this convention can not act upon idealities; it can only act upon that which is practicable to all honest, efficient medical schools.

It is hoped that the medical press and teaching fraternity will freely and exhaustively discuss the subject-matter of this convention. The doing of this at once will enable it to enter upon its labors with a very complete knowledge of the facts in the case.

To avoid misconception, let it be distinctly noticed that, although this convention is called by the "American Medical College Association," it is entirely distinct from that body. When assembled, the convention will elect its own officers and adopt its own methods for transacting its business in pursuance with the object of the call.

COMMENCEMENT AT THE MEDICAL COLLEGE OF INDIANA.—This college held its first commencement exercises on February 28th. Dr. G. W. Mears, Dean of the Faculty, delivered the opening address, congratulating the profession upon the consolidation of the two former medical colleges, and upon the good work done by those who were about to receive their degree. After a few remarks by O. A. Burgess, D. D., President of Butler University, the degree of M. D. was conferred on sixty-six graduates. Then followed the valedictory, delivered on the part of the faculty by Dr. C. E. Wright. The following is a list of the graduates:

John A. Aldred, P. S. Baker, Wilson T. Banker, Eli F. Brown, B. Byrkett, M. L. Bosley, A. W. Brayton, Charles E. Ballard, L. F. Brown, W. H. Butler, J. T. Burford, Ernest Copeland, G. W. Crider, Ben. Davis, George H. Davis, P. K. Dobyns, Chas. A. Daugherty, B. T. Fisher, S. C. Fitzgerald, A. B. Ferguson, James M. Gentry, C. O. Hood, James H. Holmes, George H. F. House, N. P. Howard, Jr., Frank F. Harvey, Charles C. Hill, W. F. Heinrichs, James M. Jones, Caleb V. Jones, Jr., Alpheus H. Julian, Oscar B. Johnson, Royal Jennings, Julius Krug, John Kutch, John V. Litteli, Henry Long, G. Thompson McNutt, Geo. C. Mason, William R. Moffitt, James A. Modesitt, S. W. McMahan, W. F. Oliver, L. B. Paul, John L. Puckett, John W. Partlow, L. L. Quick, Thomas R. Rubush, J. S. Ragan, R. H. Ross, Frederick Stevens, James W. Scott, J. A. Sims, Gerhard W. Sommer, J. H. Spurrier, Benjamin F. Snyder, James T. Towey, C. L. Thomas, W. P. Yonkey, I. C. Wood, Oscar L. Wilson, O. P. Waite, W. L. Wade, P. J. Watters, Chas. Yoke, W. A. Yohn.

COMMENCEMENT EXERCISES OF THE UNIVERSITY OF LOUISVILLE.—The commencement exercises of the University of Louisville were held February 27th, at Public Library Hall. The Medical and Law Departments united in the exercises.

The Yandell gold medal, named in honor of the late Dr. Lunsford P. Yandell, Sr., was won by Dr. A. Forst, of Kentucky; the second gold medal was won by Dr. Frank Pusey, of Kentucky; and the third by Dr. Chas. Murphy, of Indiana.

The undergraduates' prizes were awarded as follows:

To Mr. R. Maupin Ferguson, a case of surgical instruments, offered by Messrs. Arthur Peter & Co.; Mr. James P. Slaughter, the books offered by Messrs. John P. Morton & Co.; and Mr. Murray B. Manly, a case of instruments, offered by Mr. Simon N. Jones. The same gentlemen won honors in the undergraduates' contest.

The names of the following gentlemen appear on the roll of honor:—Abraham Forst, of Louisville; Frank G. Pusey, of Kentucky; Charles W. Murphy, of Indiana; Finis E. Jeffery, of Arkansas; Isaac F. Miller, of Arkansas; A. Miller, Kentucky; Isaac J. Newton, Jr., Arkansas; Archie O. Burton, Kentucky; Wyatt I. Letcher, Kentucky; Albert O. Oliver, Alabama.

The degree of Doctor of Medicine was conferred on eighty-four candidates, named as follows:

Marcellus F. Alford, Louisiana; Rezin L. Armstrong, Louisiana; Nicholas R. Alvey, Kentucky; William B. Battle, Tennessee; Edward A. Baxter, Arkansas; Joseph E. Bland, Kentucky; James G. Boston, Indiana; Andrew J. Brewer, Arkansas; Archie O. Burton, Kentucky; Archie C. Barr, Kentucky; James H. Carter, Indiana; Wm. L. Chester, Tennessee; Joseph H. Clark, Kentucky; Lyttleton B. Cook, Kentucky; John W. Cook, Indiana; John J. Cook, Mississippi; William A. Cole, Indiana; Isham E. Cottingham, Kentucky; Thos. H. Curd, Kentucky; John J. Dial, Texas; William T. Durrett, Kentucky; George D. Dickerson, Mississippi; Henry T. Dixon, Kentucky; Jerome B. Dillon, Kentucky; Lindsay English, Jr., Illinois; John W. Fischer, Indiana; Abraham Forst, Kentucky; Paul Foster, Louisiana; Hilary Gaither, Indiana; Enoch N. Gentry, Missouri; William G. Harrison, Kentucky; William E. Herndon, Kentucky; Benj. F. Hill, Kentucky; Thomas B. Hodges, Arkansas; Uriah G. Holloway; William T. Hubbs, Tennessee; Robert

S. Jamison, Mississippi; James F. Jarvis, Missouri; Finis E. Jeffery, Arkansas; Garrett D. Judy, Kentucky; Robert C. Kenner, Kentucky; James D. Kirkpatrick, Kentucky; Samuel L. Ledbetter, Mississippi; James M. Lefeber, Indiana; Wyatt I. Letcher, Kentucky; Robert Lovelady, Arkansas; John W. Martin, Jr,, Missouri; Anthony Miller, Kentucky; Isaac F. Miller, Arkansas; Geo. T. Milligan, Kentucky; Archie M. McConnell, Kentucky; William W. McDowell, Kentucky; James A. McNally, Kentucky; Charles W. Murphy, Indiana; Isaac J. Newton, Jr., Arkansas; William D. Neel, Kentucky; Albert O Oliver, Alabama; John W. Peeples, Tennessee; William T. Plummer, Kentucky; Frank G. Pusey, Kentucky; Bradley T. Rafferty, Indiana; Ralph Redditt, Mississippi; Andrew B. Robinson, Indiana; Hilary D. Rodman, Kentucky; Dionysius B. Rudy, Arkansas; Paul C. Seng, Kentucky; John L. Slayden, Kentucky; Samuel J. Spencer, Arkansas; Samuel H. Slaughter, Kentucky; Jas. G. Stark, Tennessee; Clarence A. Strickler, Kentucky; Joseph A. Swartzel, Indiana; Benjamin F. Taylor, Kentucky; Andrew S. Thompson, Mississippi; George T. Van Cleve, Kentucky; Henry Vonderbeck, Kentucky; E. Frank Waller, Kentucky; Jos. H. Weller, Iowa; Buchanan S. Wert, Alabama; Frank W. Weis, Missouri; Columbus V. Wedding, Kentucky; Christopher R. Williams, Kentucky; William A. Wilson, Mississippi; John L. Whitnel, Illinois.

The valedictory was delivered by Professor J. W. Holland, and was admirable both in matter and manner. His subject, Sanitary Reform, was timely chosen. It reads as follows:

Ladies and Gentlemen: It is my part to say the formal good-bye of the medical faculty to their late pupils, and to so say it as not to bore this miscellaneous company.

The *Alma Mater* has trained her children in the way in which they should go, and, after the manner of good mothers, gives her pious injunctions at parting in such terms as shall be edifying to those not of the family, who are yet interested and who assist at the spectacle. I have chosen as a special topic "The Ounce of Prevention," at the risk of being prosy upon an occasion considered sentimental; but for fear of putting the damper on your gladness, I shall confine my remarks to a narrow field of the subject, and be quickly done with what I have to say.

Of your number the majority are destined to be men of action, satisfied at the utmost with doing well the ordinary things that must be done somehow. A very few will most likely seek knowledge in unbeaten tracks and guide the opinions of their fellows. The civic virtue of enthusiasm for the public health, for which its representative in the faculty is widely known, must strike fire from the souls of some who sat at his feet or witnessed his disinterested zeal. The world and the time call loudly for medical men who shall be pure priests of sanitary science and able preachers of the faith. Each of

those diplomas bears our motto, expressing the aim of our efforts to keep sound the strong as well as make sound the weak. If the University, in preparing for every-day work her thousands of useful servants, could, in fifty years, train in the right direction one inspired observer to a pathfinder through the darkness which surrounds the causation and prevention of an epidemic, it would be more than armies to the public weal. Surely the hope is not vain or the value of such work exaggerated.

Let us read again the history of vaccination. The name of Jenner should have power to conjure the spirits in hearts of little faith as long as his talismanic scar is a shield against small-pox. To Pasteur France acknowledges a heavy debt of gratitude for the febrine discoveries by which her sinking industries were revived and her fairest provinces saved from ruin.

Emulate while you wonder at young Koch, doctor in a German village, who, during his spare hours, discerned with his microscope the living germ of splenic fever, that had poisoned to death the blood of men and slaughtered hecatombs of cattle. But yesterday Klein, of London, recognized the animated contagion which, in the blood of the pig, made the havoc called infectious typhoid. Colaborers in other parts of the world confirm these discoveries, and announce every detail of the pernicious life of the unbidden guests. Their habits are noted, their protean forms described, their thermal death-point determined.

Of the many experimenters now engaged in these enterprises of great pith and moment may be mentioned Ballinger, who has lately found indubitable proof of the significant fact that the spores of a certain septic organism have greater powers of resistance than the adult, germinating after exposure to a temperature ten degrees above the boiling point of water. At the Brown Institution ingenious workers have shown that the "grains" used by cattle for food are favorable soil for the growth and reproduction of a germ which can be made to produce diseased effects at will under the simplest conditions. Their next note records a fatal epidemic which, from scattered points, has been directly traced to these organisms, found in a particular sample of brewers' "grains," used as food. Last summer Downes and Blunt noticed that the development of bacteria of putrefaction was arrested by direct sunlight. Every inquest conducted by careful methods into the life, history and habitat of these lowly forms, and their relation to infection, stands a chance of revealing highly important truths. Every discovery in this field supplies some part of the evidence lacking to make what is called the germ theory of disease something more than a good working hypothesis.

When it is generally conceded that two epidemic diseases in the higher animals depend upon the introduction of particular species of microscopic being; that in man another species of the same genus is associated in the same way with septicemia, another with splenic fever, and a third with relapsing fever, we can not escape the conclusion that the other fevers and inflammations of this type have probably a kindred origin, and that further research, as ingenious and patient as those just quoted, will be rewarded by results as brilliant. If among you there is one would-be Pathfinder let him

take this luminous record as a lamp to his feet. The published achievements of that system of treating wounds which protects the patient against these ferments that would breed infection if admitted into his blood, have demonstrated the usefulness of these studies. They have won many converts to the view that nature plays a close game against her weak antagonist, and that his largest losses come by ignorance of her dark ways. To win in this rigorous game, it is better far to put a check upon her every move than recklessly to throw away pawns in the hope of making a brilliant stroke to remedy the critical situation. A thorough comprehension of the dangers that lurk in the air, embodied in the motes that make it populous, is now the most urgent need of our science. This will give us a prevision upon which will follow hard the precautionary action. Obedience to the law when its terms are known, will make us masters where now we are trembling slaves. The signs of the times, if read aright, foretell that great as is the progress in the art of curing, the day is at hand when that of preventing shall outstrip it.

In despair at finding no remedy for the specific fevers and inflammations, doctors are now with unparalleled industry forging armor of proof and tried weapons with which to foil and extirpate their causes. What heart that has ever softened at the mention of misfortune can hear without emotion, from the official report, that one hundred and twenty-five thousand persons die annually in England who should go on living if the existing knowledge of the causes of diseases as affecting masses of population were reasonably well applied throughout the country. What hand that would lessen this sum of needless sorrow, can hold still while death unhindered gathers this awful harvest. What soul would not be glad to hasten the day when epidemics shall be considered a reproach rather than the irresistible visitation of an angry God.

A mortuary list of fifteen thousand from yellow fever and the loss of a hundred million dollars, which last summer's experience brought upon a limited section, has set in motion an agitation wide and profound, that shall certainly end in definite improvement if actively fomented and wisely directed. If the sense of the nation were taken there would result an overwhelming vote of urgency for sanitary legislation to aid in protecting us from the invasion of that subtle and relentless enemy of the race which every summer menaces the southern half of our land. Should the tide of feeling be taken at its flood we may see such a change wrought in the causes of mortality, as followed the movement in England after the cholera of 1849. The time is ripe for action, but the diversified opinions and the jarring interests at stake require cautious engineering and nice adjustment of power.

Government work should not only be in harmony with our cherished political institutions, but should avoid provoking sectional and commercial jealousies. Crude and panicky measures that bear down all considerations but the prime one of safety, will not meet with universal agreement and co-operation; but more likely there will follow a reaction even of the most progressive, which will put us further back than we are at present. The wisest course should conform to a broad scheme of public hygiene far reaching and permanent, based upon the most advanced knowledge and having in view

ultimately the education of individuals ignorant of our glorious gains to a right appreciation of this phase of private and public duty.

> "Then if each will see to his own reformation,
> How very easily we might reform the nation."

There is time to-day for presenting the outlines of a system of sanitary government which occurs to me to be open to but few objections. If it meets with your approval, advocate it in season and out of season. It will take a "long pull, a strong pull, and a pull altogether," if you wish to add materially to the comfort of man's estate; if you would save the thousands that prematurely die, and ward off the needless misery of multitudes that suffer impaired strength, ruined fortunes and family bereavements.

There should be created by act of Congress a National Council of Health, made up of noted sanitarians, who shall elaborate a judicious national quarantine; appoint experts to make inquiry into the mode of identification, causes and prevention of epidemics, by experiment and observation at points where the diseases are actually at work. They should frame systems for state and local sanitation, the establishment of which, in every part of the country, is of importance to the entire continent, and should, therefore, be encouraged by the government at Washington through appropriate legislation. They should take steps in time of an epidemic, through proper channels, to disseminate knowledge of its nature, mode of propagation, and means of checking its advance. A bulletin issued from a source eminent for the qualities needed, (that is, thorough understanding of the subject and of proved sagacity,) would receive in every quarter respectful consideration and its recommendations a ready compliance. If, in process of time, by classification of accumulated data, such gain would accrue to sanitary science as has enriched meteorology through the acquisitions of the Weather Bureau, then the era of doubt expressed by the headlines "Probabilities," would give place to that of confidence denoted by the title "Indications." We shall then wonder that there was ever a time when epidemics were classed, as storms once were, among things inscrutable and supernatural. As ships sail and various industries are guided by the official statement of "whence the wind cometh and whither it goeth," so sorrow shall not again sit in the streets, when by improved processes we detect and arrest the pestilence that walketh in darkness, and stamp out at its birth the destruction that wasteth at noonday.

Each state should have a Board of Health, with authority from the legislature to apply the regulations adopted at the suggestion of the National Council, and to appoint executive officers for the districts into which the state should be divided. The forces of human life are sustained or weakened by conditions essentially the same in every habitable latitude. Diseases do not respect bailiwicks, nor does the state line limit their domain. It is a serious hindrance to reform that already the different sanitary codes of the fifteen states which have adopted them are out of concert, and in some cases are in direct conflict.

To secure the desired end, the science of health and quarantine, as interpreted by the National Council and embodied in laws, ought to be uniformly received and rigorously enforced. Some legislatures have been so jealous

and niggardly in carrying out this important function as to grant their Health Boards no authority but that of giving advice, and no appropriation beyond the salary of a compiling clerk. To make a code effective, it must be imperative and its enforcement assured by police and penalties. For years there will be much unwillingness to yield to what seems to the unconcerned a useless interference with private rights.

In order to protect herself against the plague Venice found it necessary to pronounce death upon any one who broke the laws of the Health Board. There are selfish and short-sighted Americans who would require sharp discipline to make them conform their lives to the public needs. It is safe to say that last summer millions of dollars and thousands of lives would have been spared if Louisiana, Tennessee and Kentucky had rigidly applied in time such enactments as an enlightened board would recommend. A well-organized and vigilant body of officers might have removed the recognized local conditions of yellow fever, not to mention the disputed specific element which official report says was fenced out in more than one instance by municipal precautions. Municipal boards may be organized by cities under the supervision and control of the State Board.

It should be the duty of the district health officer to have enforced the general sanitary laws, and any special requirements called for by pestilence. In the local service it will be long before all the details are worked up and order brought out of confusion. Much is gained if the people can be protected against cholera and yellow fever. Success in this will reconcile even the most unwilling to further attempts to bestow upon villages and scattered dwellings the benefits enjoyed by the cities whose triumphs in reducing the bills of mortality are well known facts, in which all philanthropists rejoice.

A fine instance of efficient work of this kind is afforded by the corporation of New York city. They have been convinced by common sense and statistics that, as physicians know more about disease than the laity, and as sanitary engineers are superior in their specialty to the average politician, it is well to trust these vital matters to their skilled hands. The district officer should preferably be a medical man, qualified to ferret out the causes of local outbreaks and study their peculiarities. His character should be in keeping with the responsible duties intrusted to him—duties that move along the higher plane of professional work. Remember that you do not rise to the level of the ideal, you will not completely illustrate the intrinsic nobility of your calling and its claims upon the gratitude of mankind, until by your persistent efforts the environment is brought under control, and its inflictions in the shape of pestilence be prevented. It is a wise saying that a statute is a dead letter when the majority do not feel that its execution will be a material help. The public-spirited doctor has opportunities every day for inculcating the gospel of maintaining mental, physical and moral well-being by due observance of nature's laws.

To insure that the sanitary code shall not be a dead letter, it will be necessary to instruct your patients in domestic and personal hygiene, and by incessant agitation start a general demand for the official application of known principles of health to the surroundings of the community.

The health officer should find in you a willing coadjutor in suppressing town nuisances, and removing collections of filth before they engender their deadly brood; isolating contagious cases and securing for them a private burial; advising as to the salubrity of town sites, and procuring by concerted action the drainage of marshes too near human habitation; compelling the authorities to provide an abundance of pure water and adequate sewerage; keeping an eye on the food in the market places; furnishing the data for the record known as vital statistics, and giving free vaccination to the poor. At all times let him have your support and hearty coöperation.

In the hour when apprehension of impending pestilence imposes upon him a task to try the stoutest will and best disciplined brain, do not embarrass him by the dissensions that have made our profession a by-word, but stand by his side, and when his hands waver in their mortal weakness hold them aloft as long as the battle rages. In the words of Burke, "applaud him when he runs to his object; console him when he falls; cheer him when he recovers, but let him pass on; for God's sake, let him pass on."

Let the individual opinion wither that the public trust in authority may grow strong. As you would refrain from adverse criticism of the ethical system under which we live, before one under deficient moral control, so speak of your medical objections to professional audiences only. Show to the world that doctors can conquer themselves as your predecessors have shown that they can die at their posts when the evil day cometh. Your Alma Mater need not tell you to be brave and self-sacrificing; her Spartan sons return with their shields, and too often are borne home upon them. Some day when you revisit the halls you are now about to leave, you shall find a memorial tablet upon which will be engraved the names of her dead heroes. Their deeds were such as old Plutarch loved to tell. To the age of fable must we go to find a parallel for the Hickman episode which closed the life of Dr. John L. Cook, of Henderson, Ky. His incomplete but shining career reminds us of the fragmentary statue of Theseus; the grand members that we see are of a mold to rescue weakness in many adventures, and even now they fire the imagination of the observer, who laments the missing portions, till the torsa is transfigured a finished masterpiece. Among these names will be that of Renner, of Indianapolis, who two years ago stood here for his honors, our St. George, the Christian knight-errant, who from his secure home in the North went down to the stricken land and into the air that was poison to his unaccustomed frame, to fight a dragon all too strong for even his faith and devotion. While too much can not be said in favor of a prudent regard for the laws which when violated entail suffering of mind and body, there is something not open to censure but worthy of the deepest reverence in these sublime actions that reck not of health nor of danger, when humanity cries for help, but avow their proud trust in the energy of manhood and the resistance of the individual will.

> "Henceforward, rise, aspire,
> To all the calms and magnanimities,
> The lofty uses and the noble ends,
> The sanctified devotion and full work,
> To which thou art elect forevermore."

MR. CHIENE'S LECTURES ON SURGERY.—The writer of this note being much interested in the application of antiseptics to surgical practice, obtained last summer, while in Edinburgh, the promise of Mr. Chiene to furnish him a report of such lectures, in the course Mr. C. was just then concluding, as related to antiseptics, and to the subjects which led to a proper understanding of the principles on which the use of these agents was based. The title which the author himself selected, that of the "Elements of Surgery," we must be allowed to think is not well chosen, for certainly in the main the lectures will relate to other, and to practitioners weightier, matters. The earlier lectures in the course will consist of an attempt to demonstrate that wounds heal, as John Hunter asserted, by blood-clot—that the colorless blood clot and inflammatory lymph are one and the same thing. The causes, symptoms and principles of treatment of inflammation will then be discussed; suppuration, putrefaction and the antiseptic system follow next in order; while mortification, ulceration and the practice of antiseptic surgery, illustrated in the treatment of wounds, compound fractures, etc., will conclude the course. We accept in advance the thanks of our readers for providing them with a thorough good piece of work on the great question of antiseptics, done by a conscientious and intelligent observer, who has had at his disposal all the means necessary to enable him to begin with sound premises and arrive at correct conclusions.

MEDICAL COMMENCEMENTS.—At the Commencement of the Miami Medical College of Cincinnati, on the 28th ultimo, the degree of M. D. was conferred upon thirty-four candidates. Dr. J. A. Murphy, Dean of the Faculty, before presenting the students for their degree, took occasion to speak of the relation of the profession to the people. One point which he especially emphasized was what he termed the Ohio "barbaric idea," which "idea" was to prevent dissection by imposing a heavy fine on any one having in possession material for dissection. Such a bill was recently introduced into the Ohio

legislature by a Mr. Jackson, and the manner in which Dr. M. pointed out the ridiculous position of this pseudo statesman and his confréres, would become the satire of a Juvenal. The valedictory was delivered by Dr. E. Williams, who deviated from his specialty, and gave an able address on "Alcohol and its Uses"—a subject which has received too little attention from the physician especially and the public generally.

The Medical College of Ohio held their graduating exercises on the same evening, at which time one hundred and one gentlemen took the degree of M. D. Dr. Bartholow, in his preliminary remarks, followed a train of thought somewhat similar to Dr. Murphy, and said that an unprejudiced person could readily "see how far behind our so-called statesmen of Ohio are in their conception of the duty they owe society in the matter of medical education." Dr. C. D. Palmer delivered the valedictory, showing that there is *unity* in our art, and that true scientific medicine is not composed of a mass of heterogeneous theories, speculations, pathies and dogmas, but that our stronghold is *rational medicine*.

PAUL FABER, SURGEON.—One of the best of recent novels by George MacDonald is that having this title. We think it will prove especially interesting to professional readers. They will find several professional topics presented, such as venesection, vivisection, transfusion, and resuscitation of the drowned. Possibly George MacDonald's theology may not be acceptable to all, nevertheless there is much of vivid description, of thorough analysis, and of broad, catholic thought in the book, which can not fail to not only interest but also to improve the intelligent reader.

WILLIAM H. BYFORD, M. D.—Dr. Byford has been elected to the Professorship of Gynecology of Rush Medical College. We congratulate the college in establishing this chair, and in filling it so ably. But why should he desert his old associates and the medical school which he assisted in establishing, and to the success of which he has contributed so much, and cast his great influence in behalf of a rival institution?

MEMORIAL ADDRESS

ON THE

Life, Character and Death of Dr. John L. Cook,

OF HENDERSON, KENTUCKY,

Who died at Hickman, Ky., of Yellow Fever, October 1, 1878.*

The State of Kentucky contributed with a lavish hand the lives of her precious sons in the apparently futile effort to stay the ravages of the death-dealing epidemic of 1878. Fully 20,000 of our fellow-citizens of the Southern States have perished at the hands of the monster Yellow Fever, during the present year. Many of the fairest portions of the sunny South have been decimated by the plague in the last four months. Over one hundred of our medical brethren have found untimely graves in their efforts to save others from the horrors of the "black death" which has been running riot in the most beautiful country under the sun. The story of Grenada, New Orleans, Memphis, Vicksburg, Holly Springs, Greenville and Hickman, can never be forgotten, while pity has a tear to shed for the loved and the lost. But to us the saddest chapter in the history of the late devastating simoon of suffering and death, we find in the melancholy fate of Hickman during the last three months. Its sorrowful remembrance even now rests like a funeral pall upon the hearts of our people. It was in that death-stricken town, when the brave CATLET, BLANTON, the PRATHERS, FARIS, and CORBETT had fallen in the defense of the people who had loved and trusted them, that the fearless volunteer physician, our hero, our late companion, Dr. John L. Cook, yielded up his life upon the field of proud honor, in the thickest of the fight, in defense of the lives of strangers, with his face to the foe, dying as a brave man loves to die, for God and his

* Read before the McDowell Medical Society, at Hopkinsville, Ky., October 30, 1878, by J. W. SINGLETON, M. D., of Paducah, Ky.

fellow-man! A brief sketch of the life, character and death of our late brother and associate, Dr. Cook, may be recorded here as a memorial of "the spirit that's gone," that others may remember his example, and strive to imitate the virtues that commended him so strongly to the hearts of his medical brethren.

John Lay Cook, son of Edmund and Elizabeth Cook, was born July 3, 1838, in Russell county, Kentucky, and raised near Jamestown, in this state. He was educated at a country school in his native county, and at the age of fifteen years began teaching a mixed public school, on his own account; in which he was eminently successful, not only in educating the pupils under his charge, but in informing and disciplining himself, mentally and morally, for the attainment of the difficult studies in science for which he afterwards became distinguished. In early manhood young Cook commenced the study of medicine with Dr. Rowe, of Rowena, Ky.; and as early as nineteen years of age began the practice of his profession.

In 1861, at the age of twenty-three years, John L. Cook enlisted as a private soldier in the Third Kentucky (Confederate) Cavalry, commanded by Colonel Gano, and afterwards served under Colonel Chenault, and then Colonel now Governor James B. McCreary, of Kentucky. He saw considerable service in Kentucky, Tennessee and Virginia, and was finally captured with Gen. John H. Morgan, at Buffington Island, Ohio, in the noted raid through that state. Dr. Cook was confined a prisoner at Camp Douglass, Illinois, for nearly two years, and while there was given the charge of his sick comrades, to whom he ministered with characteristic and untiring devotion; some of these gentlemen who reside in Henderson now, speak of this feature of Dr. Cook's life in terms of unbounded praise. "They say, too, that his patience under the hard conditions of confinement, and his bright and cheery manner, under all circumstances, were the praiseful theme of every tongue, and that there was no man in the prison who did not hail his company and the assurance his society afforded, as actually a boon from heaven." What a full and perfect indorsement of Dr. Cook's nobility is found in the love and admiration of his late comrades in arms!

Dr. Cook's first location after "the surrender" was at Bardstown Junction, Ky., where he made money enough at the practice of his profession to enable him to attend a course of lectures and graduate in the Medical Department of the University of Louisville. He commenced the practice of medicine as a graduate in Shepherdsville,

and a partner of Dr. H. C. Crist, a leading physician of that place. Dr. Cook remained at the latter town for three years, and did well, making many admiring friends. In the fall of 1869 Dr. Cook went to New York, attended a winter course of lectures in the Bellevue Hospital Medical College, and graduated in that flourishing institution in 1870. Upon his return from the east he remained in Shepherdsville but a few months, and discovering a wider field of usefulness, he removed to Henderson, Kentucky.

Dr. John L. Cook became the husband of Miss Annie B. Oldham, at Elizabethtown, Ky., May 15, 1871, the Right Rev. Dr. Cummins, of the Episcopal church, performing the ceremony of marriage which united our lamented friend to one of the gentlest and brightest of her sex. Soon after this happy event, Dr. Cook was induced to locate in Elizabethtown, where he remained some eighteen months, and then moved back to Henderson, and of which he was a beloved and trusted physician, and honored citizen at the time of his lamentable death.

"Self-made men are the glory of the world." John Lay Cook was truly a self-made man. He was the architect of his own fortune, the riches of which were found in his personal, moral and professional excellences. So far as this world's goods were concerned, he never received a legacy of even one dollar, to remind him that he might have been a favored child of wealth and ease. All the blessings of the gods are not bestowed on all alike who richly deserve them; but thank God!

> "The rank is but the guinea's stamp,
> The man's the gowd for a' that."

Infinitely more precious to him than gold or diamonds, were the wealth of the power of doing good to his fellow-men, and the loving wife and children with which Providence had blessed him. And now even they, with the wide world before them, which alas is too often cold and unkind, would not exchange the holy remembrance of his martyrdom on the altar of self-sacrifice, and the surpassing beauty of his immortalized name, for the wealth of the universe. Dr. Cook, like nearly all truly scientific men and devoted students of art, was entirely destitute of financial talent in the use and accumulation of wealth; in fact he did not seem to care anything about money. Aware of this deficiency in his character, he was exceedingly cautious and loth to risk property or anything else in the way of speculation. He was liberal from principle, and extremely lenient

towards his patrons whose honorable intentions were not seconded by the necessary ability to pay. Outside of medicine and its kindred studies, Dr. Cook's literary tastes were almost altogether in the line of history and science. He was indifferent to the works of imagination, with the exception of our greater standard novelists. He was extremely reticent in the expression of his religious belief, but his actions and conversation were entirely consistent with the purest christian life. In few words, our deeply regretted brother, Dr. Cook, was "a man without guile," a lover of mercy and justice, honest, modest, tender, patient, kind and brave; he was a nobleman, whose memory will ever remain fresh and bright in our hearts. My friend, Dr. James H. Letcher, of Henderson, the Secretary of the Kentucky State Medical Society, has kindly written the following most accurate personal description of our hero:

"Dr. Cook was in person tall, being six feet two inches in height, of well developed physical constitution, having an average weight of two hundred and fifteen pounds, and blessed with rare good health. His hair was black, and lying in heavy clustering curls, in which the first tint of gray was displaying itself. His eyes were brown, in whose steady gaze the unflinching character of the man made itself manifest. Complexion somewhat bronzed by exposure, and naturally a clear brunette. Mouth firm in its close, but relaxing into a most graceful and winning smile. His hands were remarkable for beauty, no man's I ever saw ever excelling them in beauty and softness; while his head was set upon a neck massive and shapely as a beautiful column."

Dr. Letcher has done ample justice to the personal appearance of his late friend and associate; but there is something yet to be said of him that was not in Dr. Cook as a handsome or a fine-looking man; there was something in his commanding, intellectual and spiritual presence that challenged the respect even of strangers. "A combination and a form, indeed, upon which every god did seem to set his seal to give the world assurance of a man."

Dr. Cook was a member of the Kentucky State Medical Society, of the McDowell Medical Society, and of the Henderson Medical Club. He was an honored ex-president of "the club," and for years took an active and spirited part in the interesting and profitable discussions of that most excellent local society. No man was more patient in the investigation of medical questions of difficult solution than Dr. Cook; no one could have been more careful than

he in forming an opinion in a doubtful case, or more modestly respectful towards the opinions of others; but having made up his mind on any given subject, he defended his position with determination and zeal, and always on the highest points of knightly courtesy, and the best of his profession found Dr. Cook, for the time being, "a foeman worthy of their steel." In answer to certain questions asked of one of the members of the Henderson Medical Club, with which he was so long identified, and among them what was Dr. Cook's medical *forte* or *specialty*, Dr. Archibald Dixon wrote:—"If Dr. Cook had any *specialty* it was in physical diagnosis, and more especially as regards diseases of the chest. He was exceedingly accurate in physical diagnosis, and I valued his opinion in that branch as highly as that of any medical man in Kentucky. He was, as you may say, a *theorist* (though in the main a successful practitioner), and gave up his life in the attempt to demonstrate his peculiar theory in regard to yellow fever; believing that it was not contagious and non-infectious. He was a good student, fully keeping up with the most advanced ideas of his profession. He was a liberal, free-hearted, noble fellow. He was a pure and upright man, one of spotless integrity, in whose hands the reputation of every one was safe." In truthful attestation of the testimony of Dr. Dixon, come the words of Dr. Pinckney Thompson, Dr. Cook's friend and neighbor. Speaking of Dr. Cook's many virtues as a physician, and as a man, Dr. Thompson says:—"The name and character of any brother was perfectly safe in Dr. Cook's care and keeping;" and this is the highest compliment that can be passed upon any professional man in his relations and associations with his brethren.

Dr. Cook was for several years after his graduation an industrious and able contributor to the medical press of Kentucky, Virginia, and Indiana. In the August number, 1875, of the American Practitioner will be found an account of an interesting "Case of Athetosis" that came under Dr. Cook's notice; also in the same journal for August, 1876, there is a strong article from Dr. Cook's pen on "Capillary Bronchitis;" and in the September number of same journal, 1877, a paper from Dr. C. on the "Germs of Diphtheria." The Virginia Medical Monthly, published in Richmond, for September, 1875, has an article from Dr. Cook on "Curable and Incurable Diseases." The Medical Monthly for March, 1876, an essay on "Fever," from the same industrious pen; and likewise the profession will find a letter on "Pulmonary Tuberculosis," in the July number of the Virginia Medical Monthly, 1876. I regret that I have not time to

call attention to the leading points advanced in the afore-mentioned papers. I can only say that they belong to the common treasury of medical science and art, and will bear the most careful examination. The Transactions of the Kentucky State Medical Society for 1876, contains another paper from Dr. Cook on one of his favorite subjects, "Capillary Bronchitis;" and also, our State Transactions for 1877, an excellent production from the strong pen of our departed friend and associate on "The Physical Therapeutics of Fever;" a paper on "Improvements in the Practice of Medicine," read at the Frankfort meeting of the Kentucky State Medical Society in 1878. Among the papers printed by the McDowell Medical Society in 1876, I have found a thoughtful, though brief essay from Dr. Cook, on "Aborting Diseases." He may have contributed other papers to this society, but I have so far been unable to obtain a list of them. At the meeting of the Tri-State Medical Society of Indiana, Illinois and Kentucky, held at Evansville, Indiana, in October, 1877, I had the honor of reading for Dr. Cook, he being unavoidably absent on that occasion, a short and practical paper on "Malarial Coma." It was highly praised by the members present, and was printed with the proceedings of that society in the Cincinnati Lancet and Observer, in the early part of the present year. To conclude this part of our subject, by a singular and sorrowful coincidence, Dr. Cook wrote, for the Louisville Medical News, a paper on "Yellow Fever," defending his cherished theory to the last, and which was published five days after his sudden and premature death.

Dr. Cook was an earnest and deep thinker in medicine, and a vigorous writer. There were so many elements of the *hero* embraced in his composition, that he might probably have been considered in many respects a heroic practitioner of our art. Notwithstanding Dr. Cook's rare personal modesty, as he was at times even in the presence of his most intimate friends quite diffident, when aroused to action, he moved promptly and strongly towards the point which he wished to attain. He had faith in the curative powers of medicine, and confidence in the conclusions which he had drawn from study and experience. He cherished a positive belief in the theory and practice of aborting disease at the very first onset, and especially of giving the *coup de grace* to our ordinary fevers at the commencement of the attack. His motto was, "to stand by the patient with a clear judgment and a steady and resolute hand, and save him from untold aches and pains, and rescue him from untimely death." As

we have said before, and now repeat, Dr. Cook entertained a child-like faith in the virtues and powers of the healing art. He was a strong man in the kingdom of American Medicine. His teachings will not be lost upon the minds and hearts of his brethren. Had Dr. John L. Cook lived, professionally, contemporaneous with Rush or Physic, with Drake and the elder Cook, or with the few other pioneers of medical teachings in the west, he would no doubt have impressed himself deeply upon the medical practice of the country, and been regarded as one of the fathers of Kentucky Medicine, of which he died a brilliantly distinguished and promising son. Such as he was we all loved and honored him: such as he is yet, "to wife and child and fatherland," he is to us; though lost to mortal sight, to memory forever dear.

We come now to consider briefly the last sad and heroic act in the beautiful drama of the life of our friend. In 1873 Dr. Cook manifested an earnest desire to go to the help of the sufferers from yellow fever in the Southern States, but was prevented from doing so by his anxious friends. During the past summer he was only withheld from an earlier departure from home by the urgent entreaties and remonstrances of his family. When the yellow fever began its awful slaughter at Hickman, in his beloved state, Dr. Cook concluded to go at once to the rescue of the plague-stricken people, regardless of consequences to himself. His noble and devoted widow says of him: "He left Henderson more joyful and radiant than in the hour of his bridal, confident of his return, and anxious to demonstrate his theory of the disease." Alas! how sadly have we to lament the melancholy forfeit which our friend paid as the penalty of his devotion to a cherished idea in reference to the fever which put an eternal period to his useful and honorable life! Dr. Cook arrived at Hickman on Thursday afternoon, September 19th, at 3 o'clock, and was taken sick on the ninth day after his arrival at his post of duty. After repeated warnings from the brave old hero, Dr. Blackburn, not to expose himself too much, and especially at night, to the death-dealing contagion or infection of the yellow fever sick-rooms, Dr. Cook not only prescribed for the fever patients, as he had voluntarily made it his duty to do, but remained with them, and nursed them night and day without fear of consequences, or hope of fee or reward. A family of six persons were found in one room, all in an advanced stage of the fever. They were poor and squalid, and the citizens discouraged his attentions to them; but Dr. Cook would make no

distinction; he had gone to the relief of mankind, and would recognize no class nor condition. He remained in the infected chamber, and continued his attention as long as it was necessary. He thus imbibed the poison that rapidly placed him in a hopeless condition. His wife was telegraphed, and the associate press dispatches bore the sad intelligence of his illness throughout our beloved country. The good and the true in all the land united in prayer with the people of Henderson, that God would save the noble Cook, and restore him to his home and family. Mrs. Cook arrived at the bedside of her husband two hours before he died. Dr. Cook made an effort at her call to recognize her, but the brave life had ebbed too far, and he could not realize the fact of her presence. He died peacefully and without apparent pain at five o'clock in the afternoon of October 1, 1878. He was buried at half past seven o'clock P. M. on the day of his death—two hours and a half after he had drawn his last breath; and was followed to the grave by his wife and a few brave friends. "A silent tear, a few hastily-gathered flowers dropped on his grave, and all was over." Peace to his ashes!—Joy to his soul! Dr. John Lay Cook was buried at Hickman, in the midst of the slain on his life's last great battle-field. His gallant predecessors—the PRATHERS, CATLET, BLANTON, FARIS, and CORBETT—who fell in the vanguard of the forlorn hope that they had led into the very jaws of death, and were by angel arms softly lifted over that dark and mysterious river that separates the temporal from the eternal. Nothing daunted by the wrecks of man's destruction that were strewn in front and on either side, our martyred hero moved forward upon his mission of mercy, and became an untimely victim upon the altar of the common brotherhood of man! "He was buried at Hickman," and there let his mortal body gently rest until the last trump shall sound, and earth and sea give up their noble dead to the bliss of eternal life beyond the grave. The snows of many winters may enshroud the lowly tomb of him so lately with us, but who is now no more. The bright sunlight of southern skies will oft gild his hallowed resting-place with golden halo, and the soft breezes of gentle memory scatter the incense of his dear remembrance among the hearts of all who have known and loved him. Dr. Cook died as true men love to die—for God and the human race. Let his mortal remains sweetly rest at Hickman, in the midst of the fallen companions of his last earthly suffering and sorrow, with the waves of the grand old "father of waters" to

chant his requiem forever, and the rich perfumes of ever-blooming flowers to sweeten and brighten the spot which shall be always dear to the lovers of mankind.

And now, brethren of the McDowell Medical Society, I must draw my sad and imperfect memorial to a close, sincerely regretting that I have not been able to do half justice to Dr. Cook's honorable life, pure character, and heroic death. Let us in our offices of duty, like him, be full of gentle mercy and loving kindness towards our fellow-men. Let it be our pride and ambition to live and emulate the shining virtues and noble example of our heroic and self-sacrificing friend, who has just passed away; of him who has crossed over the dark river at Hickman, and now "rests underneath the shade of the trees of the paradise of God."

Inasmuch as the McDowell Medical Society is a representative body, and in full sympathy with the interests of medical men throughout the world, we will not conclude this address without saying something of those other devoted and brave physicians who have fallen in the epidemic of 1878, outside of our own state. Of the knightly Woolfolk and others at Grenada, and the twenty-seven members of our profession from all parts of this republic who have died at Memphis in the last four months; of our terrible losses at Greenville, Holly Springs, and Vicksburg; in fact, wherever the black-death has held its merciless court our brightest and bravest have fallen in the thickest of the fight, with all their armor on, battling for victory over death and the grave. Taking their precious lives in their hands, with their hearts full of love for mankind, and with God alone as their friend, they went forth to the relief of the plague-stricken. They were armed with the best antidotes to pain and misery—they were animated by a high and holy sense of the sacred responsibilities which they had bravely assumed towards the afflicted in behalf of the cause of philanthropy. These devoted men stood firm when the deadly miasm of contagion was sweeping around them, seeking whom it might destroy, and shrank not. They stood firm when strong men were laid low, and sweet voices were suddenly hushed forever; when the hearts of hundreds were stilled and cold, and hundreds more were being grappled in the talons of the relentless black monster, and shrank not. They stood firm when fathers, mothers, sisters and brothers, "with one fell swoop," were swept down and into shallow graves,

as if by a raging tempest of death and desolation, and the very air they breathed was ladened with the poison of death—when death seemed to be written between the stars of the overarching sky, and the germs of mortal agony were mingled with the dews of heaven, and they shrank not. They stood firm when the agonizing cries of poor and suffering humanity, ascending to the throne on high, received no response from the angel of mercy, no tear of pity that could assuage or palliate the dreadful tortures of those around them; when the fountain of heavenly compassion seemed closed forever, and the death-angel stretched his dark wing over the tomb of human hope, the beloved and immortal heroes of our profession (dead and living), in the plague of 1878, stood firm always, and shrank not from the calls of duty and their labor of love. Fully one hundred of our best and bravest have paid, with their lives, the penalty of their single-hearted devotion to the good of their fellow-men; and still in the darkest hours of suffering and sorrow and faithful effort to save others, and even at the portals of their self-erected and self-chosen tombs, they shrank not, thank God, not one of them: their immortal names are all upon the roll of "proud honor," and there they will remain as long as worldly affliction and human sympathy shall live among the children of men! They stood firm and shrank not—they fell at the post of duty at the hands of the cruel disease which they had often, with watchful care and tender ministrations, driven from the homes of others. But their departure from this world will be forever hallowed by the deathless associations of martyrdom in a holy cause, and the chambers of immortality stand wide open to receive them, for they were "faithful unto death," and shrank not! All hail to their fadeless memory! God bless a profession that can produce one hundred men, in four short months, who were willing to die that others might live!

Let us then, in devoting our lives, our minds, and our hearts to the good of mankind, ever emulate the virtues of our immortal dead; always,

> "Do noble things, not dream them all day long;
> And so make life, and death, and that vast forever,
> One grand, sweet song."